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Vol. 1. No. 1.

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

JUNE, 1914

(Application for entry as second-class matter at the post office at Harrisburg, Pa., pending.)

HARRISBURG, PA.:
WM. STANLEY RAY, STATE PRINTER
1914

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin Acting Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; John L. Butler, Statistician; Collectors of Statistics; clerks, etc.

Richard M. Pennock is Chief of the Division of Accident Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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INTRODUCTION.

It is hoped that this bulletin, which is the first issue of a publication to appear monthly from the Department of Labor and Industry may become a useful medium of information for the employers and employees of Pennsylvania Industries and may form a link between them and the State Department of Labor and Industry.

This issue contains, in the first part, such information as is needed in an industrial establishment for properly protecting both the property and the lives of employees from injury through fire. As will be noted, the discussion not only deals with a suitable system of fire drills but also outlines the proper method of organizing and handling a private fire-fighting department.

The second part of the bulletin presents to employers and employees various proposed safety rules and suggestions drawn up by experts directly connected with the industries, in the capacity of employers or employees, and members of the Department. These rules and suggestions are submitted with the thought that those interested will study them and submit suggestions for improvement to the Department. After this preliminary publicity the proposed regulations will be revised and submitted to the Industrial Board of the State for its consideration, and if found satisfactory they will be adopted as formal rules and suggestions of that Board, as provided by law. It is of interest to note that large numbers of experts connected with the industries are giving much time and expense to the State, without return compensation in the form of money, in order that the industries may be helped by the preparation of proper regulations of this character.

The final part of the bulletin is given over to a short account of some of the work which has been accomplished or undertaken by the Department, and other items.

In presenting this first issue of a regular bulletin for the service of the industries, it is well to lay emphasis upon the fact that the new Department of Labor and Industry was essentially created for the purpose of aiding labor and industry in every way possible. Though the Department has police powers, it has been found, after a year's experience, that by far the greatest part of its duties are in the nature of co-operation. Now and then illegal acts are committed purposely and the police powers of the Department are required. Indeed, such powers have been exercised when

necessary without fear or favor, but it has been found that our industrial people are as a whole ready and anxious not only to obey the law but to make the conditions of their establishments or work as proper as possible. Aid in accomplishing the latter object, then, is evidently the great project and duty of the new Department. In view of the preceding paragraph all employers and employees of the State are earnestly requested to make suggestions to the Department and lend their endeavors to help it to fulfill the humane and wise purposes for which it was created.

JOHN PRICE JACKSON,
Commissioner.

INFORMATION FOR OWNERS AND OFFICERS OF INDUSTRIAL ESTABLISHMENTS, HOTELS, ETC., WITH REGARD TO FIRE DRILLS, AS REQUIRED BY LAW IN THE COMMONWEALTH OF PENNSYLVANIA.

The law requires that "in all factories and industrial establishments, where women or girls are employed, and fire-escapes, appliances for the extinguishment of fires, or proper and sufficient exits in case of fires or panic, either or all, are required to be maintained, fire drills shall be periodically conducted, not less than once a month, by the person or persons in charge, under rules and regulations promulgated," in other than cities of the first and second classes, under the direction of the Department of Labor and Industry. In these drills the persons employed in such establishments shall be instructed in and made thoroughly familiar with the use of such fire-escapes, appliances and exits. The drills shall include the actual use of the fire-escapes, appliances and exits, the complete removal of the persons in an expeditious and orderly manner, by means of such fire-escapes and exits from the building to a place of safety on the ground outside. "Any person who violates or fails to comply with the provisions of this law shall be guilty of a misdemeanor, and on conviction shall be sentenced to pay a fine of not less than twenty-five dollars ($25.00) nor more than five hundred dollars ($500.00), and to undergo imprisonment in the county jail for not less than ten days nor more than sixty days, either or both."

For the purpose of aiding establishments in carrying out the provisions of this law, these instructions have been prepared. They are general in character and will of necessity have to be amended to suit the individual need of each establishment.

The management of each establishment shall first appoint a Factory Fire Chief. He shall be a man whose position commands the respect of all employees and one who will feel his responsibility for the organization, discipline, and proper management of all drills that may be necessary to empty the building of its occupants in a quick, orderly and safe manner.

DUTIES OF THE FIRE CHIEF.

As a preliminary measure, the Fire Chief shall select an Assistant Chief and also Captains and Squad Leaders for each floor, from those who are normally in authority and call them together into a conference and outline in full the organization and the movements.

The movement from each floor by each squad should be carefully laid out and the Captains and Squad Leaders made thoroughly conversant with their several duties.

His regular duties should be as follows:

Make a daily inspection of the establishment to see that the aisles, approaches to stairs, fire escapes, fire alarm boxes and fire fighting equipment are unobstructed and in good condition; that fire doors are in working order and exit doors unlocked.

See that gas lights are properly protected, and that floor sweepings, oily waste and rags, greasy lunch papers, and like material, subject to spontaneous ignition, are kept in suitable standard safety cans and that the contents of these cans are removed nightly and disposed of in the furnace or a suitable incinerator.

Prohibit the accumulation of rubbish within or about the establishment particularly around heating apparatus, radiators or any heat conductors, under stairways, in cellars, and in unfrequented places.

See that all combustible and inflammable liquids are properly cared for and handled in a safe manner.

The Factory Fire Chief shall also keep a record of the monthly fire drill, stating therein the date the drill was held, the number of employees participating therein, and the time taken to empty the building. This record shall be subject to inspection at any time by the Factory Inspector.

He shall also make daily tests of such fire alarm or fire fighting equipment as is necessary to insure good working conditions, making a record of the same in a book provided for above purpose.

ASSISTANT FIRE CHIEF.

The Assistant Fire Chief shall perform all duties delegated to him by the Fire Chief and shall assume that official's duties during his absence.

FLOOR CAPTAINS.

The employees on each floor shall be in full charge of a Floor Captain who will be governed by instructions received from the Fire Chief or the Assistant Chief.

Under the direction of the Fire Chief, the Floor Captains shall appoint a leader for each aisle or squad division and a sufficient number of employees to be stationed at exit openings and stairways, to insure an unobstructed exit, to preserve order, to keep the line in motion or to retard the same as may be necessary, to close windows and doors and to search for any who may have been left behind.

Where columns pass through openings between fire walls, passageways or stairways having sliding doors, a member of the squad shall be assigned to operate these doors and to see that they are not closed until all have vacated.

Other members shall be assigned to inspect the toilets and dressings rooms at the alarm of fire to prevent any one entering these rooms and to see that they are emptied of occupants.

The Floor Captain shall designate the stairways, fire escapes or other means of egress by which the Squad Leaders shall lead their respective columns to safety at his command to march.

AISLE OR SQUAD LEADERS.

The Senior Aisle Leader shall assume command in the absence of a Floor Captain.

The Squad Leaders are in command and shall lead their respective divisions. They shall obey all orders issued by the Floor Captains, Fire Chief or Assistant Chief and shall be held responsible for the safety of those in their direct charge.

ELEVATORS.

Elevators should not be used as means of egress by employees in case of fire drills or alarm, owing to the liability of great danger due to crowding around the elevator gates.

FIRE ESCAPES.

Fire escapes shall be kept in repair, be painted at least once in a year and shall be unobstructed and kept clear and free from ice and snow.

Where fire escapes are to be used by employees at night as means of egress, they shall be properly lighted.

All entrances to fire escapes shall be plainly marked by colored light and the words "Fire Exit."

GENERAL METHODS AND REMARKS.

The monthly fire drill signal shall be sounded at times previously unknown to the employees, except in department stores and other places where the public assembles in large numbers in which cases the signal shall be sounded after the public has been excluded.

When establishments are operated at night, fire drills shall be held for the employees working at that time in the same manner as for those who work in the day time.

The means of egress used by the different squads should from time to time be varied, so that the employees are familiar with all means provided for leaving the building.

When the alarm of fire is given, the engineer of the establishment shall be instructed to shut down at once all machinery and to cut off the supply of gas to the building by means of an outside valve after all have vacated the building.

It is of the utmost importance that all windows opening upon, above or below the fire escapes, be promptly closed in order that smoke or flame may not prevent the use of the escapes.

The following Fire Drill Instructions have been printed in a separate leaflet and can be obtained in any quantity by application to the Department of Labor and Industry, Harrisburg, Pa. A copy of the same shall be posted in each workroom and distributed to each employee.

FIRE DRILL INSTRUCTIONS.

FIRE DRILL AIM.

Fire drills are intended for the protection and safety of every employee, and in order to make them effective every person taking part must realize his own responsibility and assist in conducting them in an orderly and earnest manner.

ORGANIZATION.

The Factory Fire Chief is in absolute command and must be obeyed when the fire alarm signal is sounded.

He shall appoint a captain for each floor, whose duties are to form the employees of their respective floors into aisle columns or squads under the direction of an aisle or squad leader. A sufficient number of employees on each floor shall be appointed by the floor captain to be stationed as guards at exit openings and stairways in order to insure an unobstructed exit, to preserve order, to keep the line in motion or to retard the same as may be necessary. Others shall be detailed to search for any who may have been left behind and to close windows and doors.

It shall be an important duty of the Factory Fire Chief to see that at all times all external fire escapes are not made impassable by snow, ice, etc., and are in good working order.

IN THE EVENT OF FIRE.

Immediately give the Factory Fire alarm by the method adopted.

Telephone fire headquarters without delay and send in alarm from auxiliary box, or nearest city fire alarm box.

WHEN FIRE ALARM SIGNAL SOUNDS.

Employees shall at once:

Stop work.

Shut off power.

Stop machines.

Shut off gas and other open flames.

Close all doors and windows.

Put chairs, stools and other obstructions on top of or under benches to clear the passageway.

Form line promptly with front of column facing the usual egress aisle and obey word of command from Floor Captain.

AT COMMAND TO MARCH.

March rapidly in the usual formation from the building by means of the designated exits. Follow the aisle leader and do not push or crowd.

Retain formation until dismissed, or the line is returned to original starting point.

FOR YOUR SAFETY.

Don't treat the fire drill as a joke—it may mean your life or death.

Don't scream, laugh, talk or make unnecessary noise. Discipline must be maintained. Obey all regulations and commands.

Act promptly—your delay may endanger the safety of not only yourself but other persons.

Do not wait to get your hat and coat, your life is of more value.

Don't remain in toilet or dressing rooms.

Don't try to use elevators.

You must assist in carrying out instructions.

SUGGESTIONS FOR ORGANIZING FIRE BRIGADES.

FIRE BRIGADE ORGANIZATION.

The Factory Fire Chief shall organize a Fire Brigade. The Brigade shall consist of a sufficient number of employees, who shall be formed into a Company, or as many Companies as the size of the establishment may warrant.

The Fire Chief shall appoint a Captain and Lieutenant for each Company, whose duties shall be to command the forces under their charge, as directed.

He shall appoint the proper kind and number of men to man the fire fighting equipment. These members shall be thoroughly drilled in the handling, use and care of all the fire fighting equipment intrusted to their charge.

He shall district the establishment and shall assign such members and such apparatus to each district as he deems sufficient to give adequate protection.

He shall hold frequent drills in different parts of the establishment and instruct the different members of the Brigade exactly what to do in case a fire occurs in any different part.

The Fire Chief shall also see that the members of the Brigade familiarize themselves with every portion of the establishment so that in the event of fire or smoke they can act with dispatch and judgment.

In the absence of the Fire Chief or of the Assistant Fire Chief, the Senior Captain shall assume command, and in the absence of the Captain of a Company the Lieutenant shall be in charge.

GENERAL METHODS AND REMARKS.

The members of the Brigade shall each be given a specific duty and at an alarm of fire they should quickly assemble, without interference to the egress of operatives from building, at designated places in the establishment, where the fire equipment assigned to them is stationed.

Those assigned to portable fire fighting equipment such as fire extinguishers, water pails, etc., should congregate at the fire danger point and act as directed by the Fire Chief or his subordinate officials.

Those assigned to standpipe hose stations should stretch the fire hose and immediately arrange to concentrate the entire capacity of the water supply under their direction on the fire danger point.

Suitable badges should be given to the members of the Fire Brigade which will give them a certain amount of distinction when detailed for this work.

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SAFETY AND WELFARE STANDARDS

SUBMITTED TO

THE INDUSTRIAL BOARD

OF THE

DEPARTMENT OF LABOR AND INDUSTRY

OF THE

COMMONWEALTH OF PENNSYLVANIA

HARRISBURG, PA., MAY 9, 1914

ON THE FOLLOWING SUBJECTS:

MACHINE TOOLS
TRANSMISSION OF POWER
WOOD-WORKING MACHINERY

NOTE: The following specifications are based upon reports on these several subjects, submitted to the Industrial Board of the Department of Labor and Industry, by joint committees* composed of members of the Board and representatives of concerns actively interested in the subjects.

The thanks of the Board are due to the gentlemen who co-operated with its Committee including the Workmen's Compensation Service Bureau of New York City.

*See pages 45 to 47.

245917

MACHINE TOOLS.

V—1.70 MACHINE TOOLS.

Lathes, Planers, Milling Machines, Boring Mills, Metal Saws, Keyseating Machines, Shapers, Slotters, Gear Cutters, Drill Presses, and all other machine tools shall have all gears, sprockets, chains, bands, belts, pulleys, clutches, wheels, shafting, spindles, couplings, counterweights, revolving and reciprocating parts, and all other hazardous points, parts or projections guarded as specified by this Department. See Feed Gears, Belts, Shafts, etc.

V—1.711 LATHE DOGS.

The use of Safety Dogs is strongly recommended. Projections, set screws and bolt heads shall be made flush or shall be guarded.

V—1.712 FACE PLATES, CHUCKS, COLLETS.

All new installations of Face Plates, Chucks and Collets shall be cylindrical with no projecting parts.

Face Plates, Chucks and Collets now in use having projecting parts shall be encased with hinged guard.

V 1.713 DRILLING ON LATHES.

The use of drills on dead centers unless securely fastened thereto should not be permitted.

V—1.74 AUTOMATIC LATHES.

Cams and other automatic parts shall be carefully guarded.

V—1.75 HOLLOW SPINDLE LATHES.

Bar stocks should be guarded full length.

V—1.716 CHIP GUARDS—EYE PROTECTION.

Chip Guards should be provided on High Speed Lathes and other machinery for the protection of nearby persons as well as the operator.

Eye protection, in all Lathe, Machine, and Grinding work shall be carefully considered.

V—1.77 METAL PLANING MACHINES.

All openings in bed frames shall be covered with solid, metallic aprons, securely fastened in place.

Ample clearance shall be provided at both ends and sides of planers for planer bed, the work being machined and its chucking.

If clearance is less than 24 inches, clearance space shall be guarded with Standard Railings.

Floor openings and pits shall be guarded with Standard Railings.

Attention is called to hazard attending the practice of reversing planer table by hand.

Counterweights on planers and other machines shall be placed in wells or securely guarded for their entire travel.

TRANSMISSION OF POWER.

V—1.60

V—1.612 STANDARD RAILINGS.

Standard Railings shall be not less than 3½ feet high, provided with toe board not less than 6 inches high, and an additional railing midway between top railing and floor, shall be constructed in a permanent and substantial manner, of either pipe (not less than 1¼ inch), metal (not less than 1½ inch angles) or wood with corner posts not less than 3 x 4 inches or its equal and rails not less than 6 x ⅞ inch. One or more sides may be hinged. Standard railings may be used to guard belts. See Belts.

The rails of Standard Railings made of angle iron or wood should be placed on the side of the post that will give the greatest support and protection.

V—1.614 EMERGENCY STOPS.

Means must be provided in each room, division, section, or department, to stop immediately all power transmission therein from such emergency stations as may be necessary; such stations to be properly marked.

V—1.615 SET COLLARS.

Set Collars shall be cylindrical, and the screws used to fasten the same to the shaft shall not project beyond the largest diameter of the collar.

Set Screws shall be immediately surrounded by the metal of the collar to the greatest diameter of the collar.

Split collars, after assembly, shall conform to the above specifications for solid collars.

V—1.62 SHAFTS.

V—1.622

Horizontal Shafts, less than 6 feet from floor or platform level, shall be encased or protected by Standard Railing.

V—1.6223

Dead ends of Shafts, exceeding 2 inches in length, shall be encased or guarded.

V—1.6226

Vertical Shafts shall be encased or guarded to a height of 6 feet from floor or platform.

V—1.631 SHAFT COUPLINGS.

Revolving Shaft Couplings shall be cylindrical, and screws used shall not project beyond the largest diameter of Coupling or its projecting flanges.

V—1.632 CLAMP COUPLINGS.

Heads and nuts of all bolts used shall be entirely surrounded by metal. It is recommended that the use of this style of Coupling be discouraged unless guarded by a cylindrical sleeve, the full length of the coupling.

V—1.633 JAW CLUTCH COUPLINGS.

It is recommended that Jaw Clutch Couplings be provided with a cylindrical sleeve to cover the jaws.

V—1.634 UNIVERSAL AND FLEXIBLE COUPLINGS.

Universal and Flexible Couplings shall be properly guarded.

V—1.635 FRICTION CLUTCH COUPLINGS.

Friction Clutch Couplings shall have their operating mechanism completely guarded where exposed.

V—1.64 KEYS.

All projecting Keys in revolving shafts, where exposed to contact, shall be made flush or shall be guarded.

V—1.650 PULLEYS.

(A). In pulleys where set screws in the hub are outside of rim, set screws shall be flush with the outside diameter of the hub.

(B). When the clearance between the pulley and bearing on line shafting is 36 inches or less, pulley shall be completely encased on side nearest bearing and all key ways in shaft shall be substantially encased or properly filled.

(C). On countershafts, the clearance between pulleys and nearest bearing shall not be less than width of belt used.

(D). All parts of pulleys within 7 feet of platform or floor shall be encased or protected by Standard Railing.

(E). Where the space between two pulleys is less than the widest belt used on either, it shall be guarded so that the belt cannot get between the pulleys.

Note:—For Loose Pulley Lubrication, see Lubrication.

V 1.66 TOOTHED GEARING.

All Toothed, Chain driven, and Friction Gearing used in machinery or in the Transmission of Power shall be completely enclosed wherever possible, otherwise, at least to base of teeth.

V—1.661

All exposed feed gears on Engine Lathes and other machinery shall be completely encased with guards that are attached to the machine, preferably, with a hinged self closing cover.

V—1.662

It is strongly recommended that pulleys, gears, sprockets, sheaves, etc., having spoke arms should be guarded by discs, as nearly as possible flush with rims of wheels.

V—1.67 BELTS.

Vertical and Inclined Belts shall be substantially guarded as follows:

If guard must be less than 6 inches from belt, with a complete enclosure, with not over ½ inch between members to a height of 6 feet above floor or platform. If guard can be placed between 6 inches and 15 inches in clearance from belt, with a complete enclosure with not over 2 inches between members to a height of 6 feet above floor or platform.

If guard can be placed with at least 15 inch clearance from belt, a Standard Railing at least 3½ feet high shall be provided.

Where belts pass through floor, a standard Toe Board shall protect floor opening.

If upper part of Horizontal Belt is less than 6 feet from floor level or platform, it shall be completely encased on top and sides, or provided with a Standard Railing at least 15 inches from belt.

Overhead Belts with lower part 7 feet or less from floor level or platform, shall be guarded on sides and bottom.

Passageways between upper and lower parts of belts are prohibited unless special permit is granted by the Department of Labor and Industry. Space traversed by such belt shall be completely barred against passage by Standard Railings.

Overhead Belts 6 inches or more in width and more than 7 feet from floor level or platform, shall be guarded underneath.

V—1.671 BELT FASTENINGS.

No change belts shall be laced with metal.

V—1.672 SHIFTERS FOR BELTS AND CLUTCHES.

Shifters shall be provided for all tight and loose pulleys and clutches.

Mechanical Shifters for change belts are strongly recommended.

Shifter Levers when suspended overhead shall be arranged to hang vertically when belt is on loose pulley, or clutch is disengaged.

All controls for stopping machines shall be within easy reach of the operator from any operating position.

V—1.68 LUBRICATION.

V—1.681

Loose pulleys shall have oiling devices so arranged, as to permit oiling, in any position of Loose Pulley when machinery is shut down.

V—1.682

An efficient system of self oiling is recommended for all bearings.

V—1.683

Drip cups shall be securely fastened.

V—1.684

Oiling shall be done only by authorized and experienced persons, properly clothed and in accordance with approved and safe practice.

Clothing shall be tight fitting and so arranged as to prevent loose parts from coming in contact with moving machinery.

WOOD-WORKING MACHINERY.

III—8.0 WOOD-WORKING MACHINERY.

All moving parts of wood-working machinery such as gears, feed rolls, cutting heads, pulleys, belts, etc., shall be guarded in an approved manner.

III—8.11 CIRCULAR RIP SAWS.

Circular Rip Saws shall be guarded by a Skeleton Hood. It is recommended that the hood be supported by a splitter located at the rear of saw, the hood to be adjustable or, preferably, self-adjustable. In ripping lumber the use of a pusher is strongly recommended. Saws shall be guarded under table.

III—8.12 CIRCULAR CROSS-CUT SAWS.

Circular cross-cut saws having fixed horizontal bearings shall be guarded by a skeleton hood. Swinging cross-cut saws shall have the saw guarded in an approved manner and have the table on an angle inclined toward the saw. All circular saws shall be guarded under table.

III—8.13 CIRCULAR SAW MILLS.

Circular saw mills shall have lower part of saw guarded to at least 3 inches beyond the teeth of saw. In setting saw mills, a clearance of at least 3 ft. shall be allowed between any fixed object and any part of the moving mechanism.

III—8.2 BAND SAWS.

Band saws shall have both wheels encased and be provided with a shield extending down to guide rolls to prevent operator from coming in contact with the saw.

III—8.3 WOOD SHAPERS.

Wood shapers shall have cutting heads carefully guarded.

It is recommended that shapers be provided with a cylindrical collar having rounded corners, of a diameter not less than the greatest diameter of cutter and placed immediately above cutter, when the work operated on permits. The collar specified may have several $\frac{3}{8}$ inch diameter perforations to permit view of work.

III—8.4 WOOD JOINTERS.

Wood jointers shall be provided with cylindrical cutter head.

III—8.5 MORTISING MACHINES.

Mortising machines shall be provided with thumb stops to prevent the hands of operator from coming in contact with chisel.

III—8.6 PLANING, MATCHING AND MOLDING MACHINES.

Planing, matching and molding machines shall have all cutting heads, gears, belts, pulleys, shafts, and other moving parts guarded in an approved manner as in other wood-working machinery.

III—8.7 SANDING MACHINES.

Disc sanders shall have periphery and back of revolving head thoroughly guarded and proper exhaust systems installed for the removal of dust.

III—8.8 TENONING MACHINES.

Cutting heads, saws if used and all exposed moving parts, shall be carefully guarded.

SUGGESTED SPECIFICATIONS FOR MOTION PICTURE THEATRES.

The following specifications were compiled by a joint committee* composed of representatives of Associations of Labor, Motion Picture Theatre Owners, Film Exchanges, Architects, Building Code Commission, and State and City Officials. Suggestions for improvements to these specifications are cordially invited, so that parts may be used as a basis for rules and regulations to be adopted by the Industrial Board or for the basis of future legislation.

*See page 46.

SUGGESTED SPECIFICATIONS FOR THE

Erection, Construction, Alteration and Repair

OF

MOTION PICTURE THEATRES IN PENNSYLVANIA

ARTICLE I.

Section 1. Every MOTION PICTURE THEATRE HEREAFTER erected, constructed or ALTERED, and all buildings hereafter erected or converted for the purposes of a MOTION PICTURE THEATRE, shall conform to the following specifications of the Department of Labor and Industry.

Section 2. (a) Before work shall be commenced on the erection, construction, alteration or conversion of any BUILDING, designed or intended to be used as a MOTION PICTURE THEATRE, the owner thereof shall submit to the Department of Labor and Industry at Harrisburg, two (2) complete sets of plans from architect's drawings, and such plans shall be approved by the Department of Labor and Industry before such work shall be commenced. Where all information as to the character of the work and materials is not indicated on the plans, separate specifications shall accompany the plans. All plans not accompanied by details drawn to a scale of at least three-eights ($\frac{3}{8}$) shall be drawn to a scale of at least one-eighth ($\frac{1}{8}$) of an inch, and shall show accurately and clearly the location and dimensions of the BUILDING and of the LOT upon which it is situated, and the location and dimensions of all the exits, AISLES, passageways and standing space; the length and width of each part of the BUILDING; all elevations showing inclines and FLOOR pitch; the arrangement of the seats showing the number of rows and the number of seats in a row, together with the dimensions of the seats and distance between rows; also the dimensions of FLOOR beams and wall supports. All radiators and projections in side walls shall be clearly indicated, and also the location and construction of the heating plant, motion picture machine booth, lighting apparatus and electric wiring, and all fire equipment.

(b) Specifications shall clearly indicate the manner in which the work is to be executed, and the kind and quality of materials to be used.

Section 3. (a) Any MOTION PICTURE THEATRE that may HEREAFTER be damaged by fire or other causes, including ordinary wear, so that at any time its value be less than one-half ($\frac{1}{2}$) its

original value, exclusive of the value of the foundations, shall not be repaired or rebuilt except in conformity with the requirements for MOTION PICTURE THEATRES HEREAFTER erected.

(b) Before any repairs shall be made, the approval of the Department of Labor and Industry at Harrisburg shall first be had and obtained, unless such repairs are necessary and occasioned by ordinary wear and do not involve the cutting away of any wall or changing the location of or obstructing any exit, AISLE or passageway or a rearrangement of the seats.

Section 4. When any MOTION PICTURE THEATRE shall have been completed and ready for occupancy, before it may be opened to the public it shall be the duty of the owner, agent, lessee or proprietor to first file with the Department of Labor and Industry at Harrisburg an affidavit executed before an officer empowered by law to administer oaths, stating that such MOTION PICTURE THEATRE has been erected, converted or ALTERED in accordance with the plans as APPROVED.

ARTICLE II.

(Note.—This article, containing definitions is taken from the proposals of the State Building Code Commission and is purely explanatory.)

Section 5. (a) The words, terms and expressions used in these Requirements, and not expressly defined herein, shall be defined as defined in "Kidder's Architects' and Builders' Pocket Book." Where such words, terms and expressions are not defined in "Kidder's Architects' and Builders' Pocket-Book," they shall be defined as defined in the Century Dictionary.

(b) Words used in the singular shall include the plural, and words used in the plural shall include the singular.

(c) Certain words, terms and expressions used in these requirements are for the purposes thereof hereby expressly defined, and wherever they appear they shall convey the following meanings:

Section 6. AISLE shall mean the space between ends of rows of seats, or between a wall and ends of rows of seats. (See MAIN AISLE; CROSS AISLE.)

Section 7. ALTERED, when used in these requirements with reference to MOTION PICTURE THEATRES HEREAFTER erected or converted, shall have reference only to changes and alterations in MOTION PICTURE THEATRES which are HEREAFTER erected or converted. When this term is used with reference to MOTION PICTURE THEATRES erected or converted before the approval of these requirements it shall mean such changes and alterations made in the manner permitted by such of these requirements which relate to MOTION PICTURE THEATRES erected or converted before the approval of these requirements, and appearing as Article 4 thereof.

Section 8. APPROVED shall mean the approval of the Department of Labor and Industry.

Section 9. AUDITORIUM shall mean that portion of a MOTION PICTURE THEATRE in which seating room and standing room are provided for the public while witnessing the pictures.

Section 10. BASEMENT is the space beneath the first FLOOR above GRADE which is partly but not more than one-half ($\frac{1}{2}$) below the highest point of GRADE, or the highest surface of the ground immediately adjoining the BUILDING if there is no GRADE, or if such surface is higher than GRADE.

Section 11. BUILDING shall mean and include every STRUCTURE having walls and covered with a ROOF.

Section 12. CEILING shall mean the under side of a FLOOR or ROOF, or the upper covering of any booth or other enclosed or partly enclosed space within a BUILDING.

Section 13. CELLAR is the space beneath the first FLOOR above GRADE which is more than one-half ($\frac{1}{2}$) below the highest point of GRADE, or the highest surface of the ground immediately adjoining the BUILDING if there is no GRADE, or if such surface is higher than GRADE.

Section 14. COMMON WALL is a wall used or built to be used for the common separation or support of adjoining BUILDINGS.

Section 15. CORNER LOT shall mean a LOT not over fifty (50) feet in width fronting on two (2) streets, or on a street and a public alley at least twenty (20) feet wide. Where the two (2) street frontages of a CORNER LOT are of unequal length, the lesser street frontage shall be taken as the width of the LOT. Street frontage alone and not alley frontage shall be considered in determining such lesser frontage.

Section 16. Court shall mean an open, unoccupied, unobstructed space, other than a YARD, on the same LOT as the BUILDING. A COURT entirely surrounded by a BUILDING is an INNER COURT. LOT LINE COURT is a COURT one side of which is bounded by a LOT line, and the other sides by a BUILDING. A COURT extending to a street, alley or YARD is an OUTER COURT.

Section 17. CROSS AISLE shall mean any AISLE which meets or intersects a MAIN AISLE.

Section 18. FIREPROOF CONSTRUCTION shall mean that type of construction in which all parts of a BUILDING that carry loads or resist stresses, all exterior and interior walls, all interior partitions, and all stairways and the enclosing walls of stairways and elevator shafts, all doors, window frames and sash, and all trimming of stairways and elevator shafts are of APPROVED FIRE RESISTING MATERIALS, and where the exposed metal members of construction are covered with APPROVED FIRE RESISTING MA-

TERIALS. The FLOOR COVERING or FLOORING may be of wood; provided that, it is laid on a continuous base of brick or concrete or other APPOVED FIRE RESISTING MATERIALS.

Section 19. FIRE RESISTING MATERIALS shall mean those APPROVED materials having desirable fire resisting qualities.

Section 20. FIRE WALL shall mean a wall, continuous vertically or continuous horizontally, built of APPROVED FIRE RESISTING MATERIALS, separating two (2) BUILDINGS or parts of the same BUILDING. Vertical FIRE WALLS shall extend from the bottom of the lowest CELLAR, or the BASEMENT, if there is no CELLAR, to a height of at least three (3) feet above the ROOF throughout their entire length. Where permitted by these requirements, FIRE WALLS may have openings; provided that, they are equipped with APPROVED self-closing fire doors; except that, automatic self-closing fire doors may be used in conjunction with APPROVED self-closing fire doors where hereinafter permitted.

Section 21. FLOOR shall mean that part of the construction of a BUILDING separating a CELLAR, BASEMENT, STORY or ATTIC from the ground, CELLAR, BASEMENT or STORY next below.

Section 22. FLOOR COVERING or FLOORING shall mean the upper side of a FLOOR.

Section 23. FRAME CONSTRUCTION shall mean that form of construction in which the exterior walls or portion thereof are of wood.

Section 24. FOYER WALL shall mean that wall of the AUDITORIUM which is opposite the rear wall, or the wall which the audience faces when seated.

Section 25. GRADE shall mean the levels of the surface of the ground established by law and on record.

Section 26. HEIGHT OF STORY shall mean the vertical distance from the top of the finished FLOOR to the under side of the finished CEILING of the same STORY

Section 27. HEREAFTER shall mean after the date of the approval of this code.

Section 28. INTERIOR LOT shall mean a LOT other than a CORNER LOT.

Section 29. LIVE LOADS shall mean all imposed, fixed or transient loads, other than DEAD LOADS due to the occupancy of the BUILDING and its exposure to wind pressure, and all construction not entering into the strength or stability of the BUILDING or STRUCTURE.

Section 30. LOCAL BOARD OF HEALTH or STATE DEPARTMENT OF HEALTH. The term LOCAL BOARD OF HEALTH in this expression shall mean and include the individual or body charged

by law with the duty of enforcing laws or regulations in matters pertaining to health and sanitation within any municipality of the Commonwealth; and the term STATE DEPARTMENT OF HEALTH in this expression shall mean the Department of Health created and established by Act of the Legislature of the Commonwealth of Pennsylvania. Any powers or duties given or imposed herein upon the LOCAL BOARD OF HEALTH or STATE DEPARTMENT OF HEALTH shall devolve first upon the LOCAL BOARD OF HEALTH, where there is such, and if not, then upon the STATE DEPARTMENT OF HEALTH. Nothing herein, however, shall be construed to limit or restrict any authority that the STATE DEPARTMENT OF HEALTH may have by law over the LOCAL BOARD OF HEALTH, or over matters pertaining to health and sanitation within the Commonwealth, not herein specifically provided for, but shall be construed as placing additional responsibilities and duties upon the LOCAL BOARD OF HEALTH.

Section 31. MILL CONSTRUCTION is that form of construction in which the exterior walls are of APPROVED FIRE RESISTING MATERIALS, and the interior structural parts are of wood of minimum sizes and dimensions, subject to the detail requirements hereinafter set forth.

Section 32. LOCAL OR STATE FIRE MARSHAL. Where any powers or duties are given or imposed herein upon the LOCAL OR STATE FIRE MARSHAL, they shall in the first instance devolve upon the fire marshal of any city, borough or township, where there is such an officer acting under law. If there is not such an officer, then such duties shall devolve upon the STATE FIRE MARSHAL. Nothing herein, however, shall be construed to limit or restrict any authority that the STATE FIRE MARSHAL may have by law over the LOCAL FIRE MARSHAL.

Section 33. ORDINARY CONSTRUCTION shall mean that form of construction other than FIREPROOF CONSTRUCTION or MILL CONSTRUCTION in which the enclosing walls are built of APPROVED FIRE RESISTING MATERIALS.

Section 34. SLOW BURNING CONSTRUCTION is that form of construction in which the exterior walls are of APPROVED FIRE RESISTING MATERIALS, and the interior structural parts are of wood of minimum sizes and dimensions, subject to the detail requirements hereinafter set forth.

Section 35. LOT shall mean the entire area devoted to one BUILDING, including all YARDS and COURTS.

Section 36. MAIN AISLE shall mean any AISLE leading in a straight line from the FOYER WALL to or toward the rear wall, or the wall which the audience faces when seated.

Section 37. MOTION PICTURE THEATRE shall mean every BUILDING, hall or room designed or used for the exhibition of motion pictures, and not having a stage and not using movable scenery.

Section 38. PRIOR shall mean before the date of the approval of this code.

Section 39. ROOF is that part of the construction of a BUILDING which forms the top or covering of any BUILDING.

Section 40. STRUCTURE shall mean and include everything constructed or erected, the use of which demands a permanent location on the soil, or attached to something having a permanent location on the soil.

ARTICLE III.

SPECIAL REQUIREMENTS FOR MOTION PICTURE THEATRES HEREAFTER ERECTED, CONVERTED OR ALTERED.

Section 41. ALL MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, shall be so designed and constructed that the FLOORS shall safely sustain, in addition to the weight of the FLOOR construction, partitions, permanent fixtures and mechanisms that may be set upon them, a LIVE LOAD of not less than one hundred (100) pounds on every square foot of surface; and the stairs and stairways a LIVE LOAD of not less than one hundred and fifty (150) pounds on every square foot of treads and landings.

Section 42. (a) All means of egress from any MOTION PICTURE THEATRE HEREAFTER erected, converted or ALTERED, shall be by doors which shall easily open outward by hand pressure.

(b) Two (2) front doors only, which are not used as emergency exits, may be locked except during the time the BUILDING is occupied by the public. All other doors shall not be provided with any form of lock or locking mechanism other than a removable bar at least six (6) inches wide and one and one-quarter ($1\frac{1}{4}$) inches thick. This bar shall be located five (5) feet from the FLOOR, and shall be supported on the door and door frame by "L" shaped castings or forgings in such a manner that, to unlock the door, the bar must be lifted upwards to disengage it from the supports. No other form of supports will be permitted.

(c) About the middle of each bar, there shall be painted on each side the words "CLOSED" "UNLAWFUL." These words "CLOSED" "UNLAWFUL" shall be visible when the door is barred no matter which side of the bar is placed outward. The words "OPEN" "PUSH" shall be painted on each exit door in such a manner as to

be covered by the bar when the door is barred, and to be exposed to the view of the audience when the door is unbarred. The lettering shall be at least five (5) inches in height.

(d) Such doors may be provided with springs or light devices, not locks, to hold the doors in a closed position, and shall at all times permit the door to yield to slight hand pressure.

Such devices shall be of APPROVED design. Substitutes, equivalents or modifications of this method of locking the doors will not be permitted.

(e) All exit doors shall be unlocked and unbarred during the entire time that the MOTION PICTURE THEATRE is occupied by the public.

Section 43. (a) In every MOTION PICTURE THEATRE HEREAFTER erected, converted or ALTERED, no wall projection, radiator or other obstruction of any kind shall be placed in any AISLE, corridor, hallway, passageway or exit. No person, except the necessary attendants, shall be allowed to stand in or occupy any aisle, corridor, hallway, passageway or exit while such BUILDING is open to the public; but a space may be reserved back of the last row of seats in which not more than twenty (20) per cent of the total seating capacity will be permitted to stand; provided that, there shall be at least three (3) square feet of FLOOR area for each person standing. Such space, however, shall be separated from MAIN AISLES by APPROVED railings, and shall be directly accessible to at least two nearby exits.

(b) There shall be placards posted in at least two (2) conspicuous places in such MOTION PICTURE THEATRE, stating the exact number of seats permitted, and the exact number of persons permitted to stand. Such placard shall be signed by the Department of Labor and Industry.

Section 44. (a) ALL MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, shall be ventilated by an APPROVED mechanical system which will supply not less than one thousand five hundred (1,500) cubic feet of fresh air per hour to each person designed to be accommodated.

(b) The number, size and location of the air inlets and discharging ducts shall be such as to distribute the incoming air and remove the vitiated air evenly without exposing any person to direct draft.

(c) The fresh air supply shall be taken from outside the BUILDING, and no vitiated air, or air from BASEMENTS, CELLARS, or other rooms shall be used for ventilating purposes, and such air shall be filtered when so ordered by the proper State officials.

(d) All such BUILDINGS shall be thoroughly ventilated immediately before and immediately after each occupation, and the

ventilating system shall be kept in constant operation during the occupation.

(e) All blowers used to distribute air through ventilating pipes, ducts or flues shall be electrically operated, and shall be provided with fusible links to stop the blowers automatically in case of fire. Such fusible links shall be connected with an automatic cut-out at the motor, and shall be located in the motion picture machine booth.

(f) Dampers shall be provided at the intake of all ventilating pipes, ducts or flues, and shall be held open by a combustible cord.

(g) Exhausted or vitiated air shall be carried to a point at least two (2) feet above the ROOF.

Section 45. (a) ALL MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, accommodating, or designed or intended to accommodate, five hundred (500) or more persons, shall be of FIREPROOF CONSTRUCTION.

(b) Such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate, less than five hundred (500) persons, shall have the exterior walls constructed of brick, stone or concrete of APPROVED thickness. The ROOF may have wood sheathing and wood trusses. In such cases there shall be a CEILING covered in an APPROVED manner with wire lath and plastered with cement plaster at least one (1) inch thick. The FLOOR COVERING or FLOORING shall be of APPROVED FIRE RESISTING MATERIALS. Internal partitions or STRUCTURES of wood or other materials not APPROVED FIRE RESISTING MATERIALS are prohibited.

Section 46. (a) ALL MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, of FIREPROOF CONSTRUCTION, may be more than one (1) STORY in height. Such MOTION PICTURE THEATRES of other than FIREPROOF CONSTRUCTION, shall be not more than one (1) STORY in height.

(b) The least height between the FLOOR COVERING or FLOORING and the CEILING in all such MOTION PICTURE THEATRES, accommodating, or designed or intended to accommodate, less than three hundred (300) persons, shall be fourteen (14) feet. Where such MOTION PICTURE THEATRES accommodate, or are designed or intended to accommodate, three hundred (300) or more persons, and less than five hundred (500) persons, the least height between the FLOOR COVERING or FLOORING and the CEILING shall be sixteen (16) feet. Where such MOTION PICTURE THEATRES accommodate, or are designed or intended to accommodate, five hundred (500) or more persons, the least height between the FLOOR COVERING or FLOORING and the CEILING shall be eighteen (18) feet.

Section 47. (a) MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, and which accommodate, or are designed or intended to accommodate, more than two hundred and fifty (250) persons, shall not be erected, converted or ALTERED on a LOT less than twenty-five (25) feet in width, and in all cases the length of the BUILDING shall be not more than four (4) times the width.

(b) Such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate, not more than two hundred and fifty (250) persons, may be situated on a LOT not less than twenty (20) feet in width; provided that, the depth of such BUILDING is never more than one hundred (100) feet.

Section 48. (a) If any MOTION PICTURE THEATRE HEREAFTER erected, converted or ALTERED, is built so as to form part of any other BUILDING, then the entire BUILDING shall be of FIREPROOF CONSTRUCTION.

(b) Wherever any such BUILDING is built so that any of its walls or any part of its walls are COMMON WALLS, then such COMMON WALLS shall be unpierced FIRE WALLS.

Section 49. (a) MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, may be located in BUILDINGS of FIREPROOF CONSTRUCTION that are used for other purposes; provided that, no halls or rooms used as places of assembly, hazardous occupations or businesses handling or dealing in materials of easily inflammable or combustible nature, shall be permitted in such BUILDINGS

(b) In all such cases there shall be separate exits to the street, and all parts of the BUILDING used for the purpose of a MOTION PICTURE THEATRE shall be separated from the rest of the BUILDING by unpierced FIRE WALLS of APPROVED thickness.

(c) STRUCTURES built over the CEILING or ROOF of any MOTION PICTURE THEATRE shall be of FIREPROOF CONSTRUCTION.

Section 50. (a) MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, shall have a frontage upon at least one (1) street.

(b) Such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate, less than five hundred (500) persons, shall either have COURTS as required for MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate five hundred (500) or more persons; or, in lieu thereof, they shall be located upon a LOT abutting on either two (2) streets, or a street and a public alley at least ten (10) feet wide.

(c) Except as hereinafter provided, such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate more than five hundred (500) persons, shall have on each side

of the AUDITORIUM a COURT extending from the street to the street or public alley in the rear, if there be such. Where there is no street or public alley in the rear, such COURTS shall extend to at least five (5) feet beyond the rear wall of the BUILDING, and there shall be a COURT in the rear connecting the two (2) side COURTS. Where less than one thousand (1,000) persons are accommodated, or designed or intended to be accommodated, the side and rear COURTS shall be not less than five (5) feet wide. Where one thousand (1,000) or more persons are accommodated, or designed or intended to be accommodated, such COURTS shall be not less than seven (7) feet wide. Such COURTS shall be paved with concrete or other APPROVED FIRE RESISTING MATERIALS. Differences in level shall be overcome by inclines having a rise of not more than one (1) foot in ten (10) feet. All COURTS shall be unobstructed from the ground to the sky.

(d) Such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate more than five hundred (500) persons, and not more than one thousand (1,000) persons, which are located on a LOT abutting on a street in the front and a street in the rear, need have a COURT on but one side, extending from the street in the front to the street in the rear. Such COURT shall be at least seven (7) feet wide.

(e) Where any such MOTION PICTURE THEATRE is located on a CORNER LOT or at the intersection of two (2) streets, a COURT will be required opposite only one (1) of such streets; provided, however, that such MOTION PICTURE THEATRE shall have a frontage on such street throughout its entire length or width, as the case may be, and that all exits shall be at the side walk level or GRADE, and that no run shall have a rise of more than one (1) foot in ten (10) feet. Otherwise a COURT will be required on the street side where the exits are not at the sidewalk level or GRADE.

Section 51. In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, the level of the front entrance at the sidewalk shall be not higher than eight (8) inches above the level of the sidewalk.

Section 52. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, accommodating, or designed or intended to accommodate, not more than five hundred (500) persons, the front or that side having the principal entrance shall be as wide as the widest part of the AUDITORIUM.

(b) Such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate, more than five hundred (500) persons, and abutting on a street in the front and on a street at least twenty (20) feet wide in the rear, or a public alley at least twenty (20) feet wide in the rear, will not be required to have the front or

that side having the principal entrance to be as wide as the widest part of the AUDITORIUM; provided that, a free unobstructed space shall be preserved as the principal entrance corridor between the FOYER WALL and the street, such space to be centrally located between the sides of the BUILDING and to be of a width of not less than twenty-five (25) per cent. more than the space required herein for exit openings at the front; and provided further that, the depth of that part of the BUILDING in front of the FOYER WALL which is used for other purposes shall be not more than twenty-five (25) feet from the street front. In all such cases where such MOTION PICTURE THEATRE abuts on a street at least twenty (20) feet wide in the rear, a COURT will be required on but one (1) side; provided that, such COURT is at least seven (7) feet wide and that it extends from street to street. Where such MOTION PICTURE THEATRE abuts on a public alley in the rear it shall have COURTS on both sides as herein required.

Section 53. In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, where the centre line of the principal entrance extended shall intersect the central axis of the AUDITORIUM at an angle other than one hundred and eighty (180) degrees, the side having such principal entrance shall have an unobstructed street frontage throughout the entire length or width of the AUDITORIUM, as the case may be, and the principal entrance corridor shall in no case be less than one-half ($\frac{1}{2}$) the width of the AUDITORIUM. Stores or obstructions of any kind will not be permitted in this entrance corridor. In all such cases, the centre line of the principal entrance corridor extended shall intersect the central axis of the AUDITORIUM back of the last row of seats, and there shall be an unobstructed passage from all exit doorways in the FOYER WALL to the main entrance.

Section 54. In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, the principal entrance corridor shall be unobstructed by booths, easels or obstructions or impediments of any kind whatever; except that, ticket booths will be permitted, provided they do not obstruct or reduce the required exit space. Pictures or lithographs may be hung on the walls of the principal entrance corridor; provided that, the same do not project more than six (6) inches into the corridor, and that they do not project into the required width of such principal entrance corridor. In addition, unframed lithographs may be suspended from above; provided that, the lower edges of such unframed lithographs do not come within seven (7) feet of the FLOOR of the principal entrance corridor.

Section 55. In MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, no balcony shall be permitted.

Section 56. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, steps or stairways are prohibited, except those leading to an office room, smoking room, check room, or retiring room. Differences in level shall be overcome by inclines having a rise of not more than one (1) foot in ten (10) feet.

(b) Where steps, stairways, corridors, hallways or passageways lead into any office room, smoking room, check room or retiring room, there shall be at least two (2) exit doors in such room, so arranged that one (1) shall open in the direction of the nearest exit. All such steps, stairways, corridors, hallways and passageways shall be at least four (4) feet in width throughout their entire length, and shall not be obstructed except by doors not less than three (3) feet six (6) inches in width in the clear. Such doors shall be double swinging doors, and shall not be provided with locks or catches of any kind.

Section 57. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, mirrors are prohibited.

(b) In all such MOTION PICTURE THEATRES no architectural feature shall be so arranged as to give the appearance of a doorway, window, corridor, hallway or passageway where none exists.

(c) In such MOTION PICTURE THEATRES no doorway other than herein provided will be permitted from the AUDITORIUM or principal entrance corridor.

Section 58. All MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, accommodating, or designed or intended to accommodate, not more than two hundred and fifty (250) persons, shall have at least two (2) exit openings at the street front, each having a width of at least five (5) feet in the clear; and two (2) exit openings at the rear, each having a width of at least five (5) feet in the clear.

(b) All such MOTION PICTURE THEATRES accommodating, or designated or intended to accommodate, more than two hundred and fifty (250) persons, and not more than five hundred (500) persons, shall have at least three (3) exit openings at the street front, each having a width of at least five (5) feet in the clear; and two (2) exit openings in the rear, each having a width of at least six (6) feet in the clear.

(c) All such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate, more than five hundred (500) persons, shall have at least three (3) exit openings at the street front, each having a width of at least five (5) feet in the clear. In addition, the aggregate width of such exit openings shall increase in the ratio of twenty (20) inches for each one hundred (100)

persons or fractional part thereof more than five hundred (500). There shall be two (2) exit openings in the rear, each having a width of at least five (5) feet in the clear.

(d) Such MOTION PICTURE THEATRES accommodating, or designed or intended to accommodate, more than five hundred (500) persons, shall have at least two (2) exit openings on each side of the AUDITORIUM directly opposite each other, each having a width of at least five (5) feet in the clear; except that, such exit openings will not be required in that side of the AUDITORIUM not abutting on a street or COURT, in cases where such MOTION PICTURE THEATRE is located on a CORNER LOT or on a LOT at the intersection of two (2) streets. Such exit openings shall be located at points equally distant from the line of the first and last row of seats. There shall be one (1) additional such door on each side for each five hundred (500) persons or fractional part thereof more than one thousand (1,000).

(e) Where a COURT is required on but one side of such MOTION PICTURE THEATRES, the number of exit openings in the wall on that side of the AUDITORIUM shall be equal to the number of exit openings required in side walls of the AUDITORIUM when there are COURTS on both sides.

(f) Every such MOTION PICTURE THEATRE shall have at least one (1) exit opening in the rear wall on each side of the motion picture screen; except that, where this is impracticable, such exit openings may be under the picture screen at equal distances from the side walls of the AUDITORIUM.

(g) All exit openings shall have a height of at least seven (7) feet in the clear; except that, when under the picture screen they need be but six (6) feet six (6) inches in height in the clear.

(h) All exits may be used for entrances; provided that, the provisions of this section are complied with.

(i) There shall be exit openings in the FOYER WALL, and in any partition between the FOYER WALL and the front of the BUILDING, to correspond in number and size with the exit openings herein required at the street front and directly opposite such exit openings. There shall be no obstruction of any kind whatever in the line of passage between such exits.

(j) The sills of exit openings shall be flush with the approach on either side.

Section 59. In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, the FLOOR level of the highest row of seats shall be not more than five (5) feet above the sidewalk level, and the FLOOR level of the lowest row of seats shall be not more than six (6) feet below the sidewalk level. Both such levels shall be measured from the same sidewalk level.

Section 60. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, the unoccupied space within the AUDITORIUM, exclusive of AISLES and the space reserved for standing room, shall be sufficient to contain the whole number of persons accommodated, or designed or intended to be accommodated therein, in the ratio of one and one-half ($1\frac{1}{2}$) square feet of FLOOR area for each person; provided that, the unoccupied space in front of the first row of seats shall not be counted for more than one-half ($\frac{1}{2}$) such total required unoccupied space.

(b) The space between the back row of seats and the FOYER WALL, and between the space reserved for standing room and the FOYER WALL, shall be free and unobstructed, and shall be at least five (5) feet in width, and shall extend across the full width of the AUDITORIUM.

Section 61. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, there shall be at least one (1) MAIN AISLE which shall lead in a straight line to an exit at the street front. Where such MAIN AISLE has seats on both sides, it shall have a uniform width of not less than four (4) feet in the clear; where it has seats on only one (1) side, it shall have a uniform width of not less than three (3) feet six (6) inches in the clear.

(b) In all such MOTION PICTURE THEATRES having exits in the sides of the AUDITORIUM, as required by these requirements, there shall be a CROSS AISLE leading to every side exit; except that, where but one (1) side COURT is required, no more CROSS AISLES will be required than when there are two (2) side COURTS. Where there are more than two (2) MAIN AISLES, such CROSS AISLE shall extend the full width of the AUDITORIUM; except that, where but one (1) side COURT is required, such CROSS AISLE need extend only to the MAIN AISLE that is farthest from such side COURT. Such CROSS AISLE shall have a uniform width of not less than four (4) feet in the clear.

(c) In all such MOTION PICTURE THEATRES, accommodating, or designed or intended to accommodate, more than two hundred and fifty (250) persons, there shall be at least two (2) MAIN AISLES.

Section 62. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, there shall be not more than six (6) seats intervening between any one (1) seat and an AISLE, nor more than thirteen (13) seats in any row between any two (2) AISLES.

(b) Rows of seats shall be not less than thirty (30) inches apart, measured from back to back.

(c) All seats shall be separated by arms, and shall be not less than eighteen (18) inches in width between arms.

(d) All seats shall be securely fastened to the FLOOR, and no swivel or revolving seats shall be permitted.

Section 63. In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, a platform will be permitted in lieu of a stage, of not more than eight (8) feet in depth; provided that, no movable scenery is employed, and that a free unoccupied space of at least four (4) feet is preserved between the front of the platform and the first row of seats. Such platform shall be constructed entirely of APPROVED FIRE RESISTING MATERIALS, except that the FLOOR COVERING or FLOORING may be of wood not less than seven-eights ($\frac{7}{8}$) inch thick.

Section 64. In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, the picture screen shall be made of APPROVED FIRE RESISTING MATERIALS, or of materials treated with an APPROVED fireproofing solution that does not destroy the effectiveness of the picture screen, and approved by the LOCAL OR STATE FIRE MARSHAL. Such picture screen shall be placed against the rear wall. Mirror screens will be permitted.

Section 65. (a) In every MOTION PICTURE THEATRE HEREAFTER erected, converted or ALTERED, all fuses and switches shall be enclosed in a box or boxes. Such box or boxes shall be surrounded by two (2) thicknesses of APPROVED FIRE RESISTING MATERIALS with an air space between them.

(b) All electrical equipment shall be installed and maintained subject to the approval of the Department of Labor and Industry.

(c) All electrical wiring shall be carried in conduits which are properly grounded.

Section 66. (a) In every MOTION PICTURE THEATRE HEREAFTER erected, converted or ALTERED, over every exit from the AUDITORIUM there shall be placed an illuminated sign with the word "Exit" thereon in letters of APPROVED color at least eight (8) inches high.

(b) All means of egress shall have signs indicating the way out to the public thoroughfare.

Section 67. (a) Every portion of every MOTION PICTURE THEATRE HEREAFTER erected, converted or ALTERED, including exits, AISLES, COURTS, corridors, hallways and passageways devoted to the use or accommodation of the public, shall be so lighted by electric light during all exhibitions, and until the entire audience has left the premises, that a person with normal eyesight shall be able to read Snellen Standard Test Type forty (40) at a distance of twenty (20) feet and Type thirty (30) at a distance of ten (10)

feet; normal eyesight meaning ability to read Type twenty (20) at a distance of twenty (20) feet in daylight. Cards showing Types twenty (20), thirty (30), and forty (40) shall be displayed in the principal corridor or hallway, together with a copy of this section.

(b) All means of egress outside the AUDITORIUM shall be adequately lighted at all times while the BUILDING is occupied by the public.

Section 68. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, no light other than APPROVED electric shall be used in any part of the BUILDING.

(b) All exit lights and exit signs and all lights in outside COURTS and in lobbies, stairways, corridors, hallways and passageways, and other portions of such MOTION PICTURE THEATRE to which the public may have access, shall be attached to the main circuit, and, in addition, there shall be a separate circuit connected to an APPROVED storage battery or dry battery system, provided with a suitable automatic cut-in switch. Such batteries shall be capable of sustaining all exit lights for at least one (1) hour after the main circuit is discontinued.

(c) All emergency lights shall be controlled only by a special service switch connected directly with the source of supply, and shall be under lock and key and accessible only to authorized persons.

(d) All lights in corridors, hallways, passageways, stairways and wherever else deemed necessary by the Department of Labor and Industry, shall be guarded with APPROVED wire network.

(e) Lights used for lighting the AUDITORIUM other than required lights shall be controlled from at least two (2) places, one of which shall be the office or ticket booth, and one of which shall be the motion picture machine booth.

Section 69. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, there shall be a permanent motion picture machine booth constructed in accordance with existing State laws. Such booth, when suspended from a wall or CEILING, shall have a platform and be accessible by a permanent stairway or ladder.

(b) Portable motion picture machine booths will not be permitted in MOTION PICTURE THEATRES.

(c) No combustible materials, other than films in metal containers shall be kept in the motion picture machine booth.

Section 70. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, there shall be at least two (2) APPROVED two and one-half ($2\frac{1}{2}$) gallon chemical hand fire extinguishers located in the AUDITORIUM, and, in addition, one (1) fire extinguisher of APPROVED type attached to the motion picture machine booth.

(b) All fire apparatus shall be under the control of the LOCAL or STATE FIRE MARSHAL.

Section 71. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, the location and position of all hand fire apparatus required herein shall be determined by the LOCAL OR STATE FIRE MARSHAL, and shall not be removed from that position except when actually in use or for purposes of instruction and inspection. When through, such apparatus shall be replaced in good working order. All hand fire extinguishers shall be fastened in position by a fine cord that may be easily broken, and such cord shall be sealed with a tag showing the date of ensealing. All chemical hand fire extinguishers shall be examined at least once in every six (6) months, and they shall be refilled when necessary, but in any case they shall be refilled at least once in every twelve (12) months.

(b) Attached to the nozzle of all chemical hand fire extinguishers shall be a long needle of steel wire suitable for cleaning out the opening of the nozzle in case it should become clogged up.

Section 72. All employees engaged in or about MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, shall be required to know how to operate all fire apparatus in the BUILDING, and it shall be the duty of the person engaging such employees or operating such BUILDING to see that all employees are properly and thoroughly instructed.

Section 73. (a) In all MOTION PICTURE THEATRES HEREAFTER erected, converted or ALTERED, only steam or hot water heating systems will be permitted.

(b) The heater room, fuel room and firing room in such MOTION PICTURE THEATRES shall be contained in a room or rooms, the FLOOR, walls and CEILING, of which are constructed of APPROVED FIRE RESISTING MATERIALS. Openings will be permitted; provided there is no opening directly into the AUDITORIUM; and provided further that, such openings are covered with APPROVED self-closing fire doors.

(c) No such room shall be located under any MAIN AISLE, CROSS AISLE, seating space or under the standing space permitted by these requirements, or under any exit or approaches thereto.

(d) No cast iron boiler operated at more than ten (10) pounds pressure, or steam boiler operated at more than thirty-five (35) pounds pressure shall be located within the main walls of the BUILDING.

(e) All piping leading from the heater room to the risers shall be covered with an APPROVED pipe covering at least one (1) inch in thickness, and pipe openings shall be completely filled in around the piping with APPROVED FIRE RESISTING MATERIALS.

(f) No coil or radiator shall be placed in any AISLE, exit or passageway, unless such coil or radiator shall be placed in recesses above the FLOOR level.

(g) All supply, return or exhaust pipes shall be encased with APPROVED FIRE RESISTING MATERIALS at least one (1) inch in thickness where passing through FLOORS.

DEPARTMENT WORK FOR 1913

The Department has recently finished a tabulation of the inspections made for the year 1913. The whole number of Inspections was 32,279, of which 19,027 were regular and 13,252 were special ones. These inspections were divided among the following classes of establishments as follows:

Classification of Establishments.	Total Number of Inspections.
Apartment, boarding and rooming houses,	283
Bakeshops,	4,052
Colleges, schools and hospitals,	124
Hotels,	413
Leather and products,	607
Lumber and products,	2,011
Mercantile establishments,	5,171
Metal and products,	2,830
Miscellaneous industries,	9,069
Places of amusement,	1,040
Public and office buildings, halls other than places of amusement,	215
Tenement houses,	12
Textiles,	5,108
Workshops (sweatshops),	1,326
Inland lake boats,	18
Total,	32,279

In the above establishments at the time of inspection, there were employed 1,093,935 persons, of whom 824,909 were males and 269,026 were females. The number of boys and girls between the ages of 14 and 16 years was about equally divided, there being 17,634 boys and 17,018 girls employed.

The following table shows the number of children dismissed from work who were employed illegally:

Number without certificate,	775
Number found to be illiterate,	6
Number found to be under age,	65
Total,	846

The inspectors of the Department issued a large number of instructions during 1913 for safe-guarding machinery, dangerous places and health. Employers were found to be very willing to do those things which the law required and are to be commended for the spirit of co-operation which they have shown towards the efforts of the Department. In order to indicate to what extent this work was carried out, the accompanying table is added:

Nature of Instructions.	Number of Establishlishments in which Instructions were issued and complied with.
To guard machinery and dangerous places,	1,635
To guard and improve elevators,	99
To erect or improve fire escapes,	314
To lessen fire hazard,	250
To provide toilets,	564
To provide dressing rooms,	138
To improve heating, lighting, ventilation and sanitation,	1,302
Total,	4,302

It must be borne in mind that the above figures represent only the number of establishments in which instructions were issued. Generally each establishment, where instructions were issued to guard machinery, had a large number of individual machines or gears, which needed guarding or a large number of protruding set screws which had to be removed. It can therefore readily be seen that the above figures represent only a small fraction of the places safeguarded.

APPROVAL OF PLANS.

About fifteen plans of proposed fire escapes and of places of amusement are received weekly by the Department. These plans are checked over by an expert and if all the requirements of the law in regard to these things are complied with, they are approved.

ACCIDENT REPORTS.

Approximately 4,000 reports of accidents are being received by the Department every month. This shows a growing observance of the law in this respect. Every effort has been made to acquaint employers with the fact that it is imperative that these reports must be sent in and it is well worth noting that this is now being done. A careful examination is made of all these reports and if it is thought that an investigation of the fatal or serious accidents is justifiable, then an inspector is sent to the scene of the accident with an idea of trying to do away with conditions which might cause the occurrence of a similar one.

Month	No. of Accidents Reports Received.	No. of Fatal Cases.
1913.		
Sept.,	2,200	27
Oct.,	2,260	46
Nov.,	1,655	32
Dec.,	2,155	21
1914		
Jan.,	3,155	25
Feb.,	4,150	41
Mar.,	4,140	35

From now on a failure to observe the law in this respect will necessitate enforcement of the law by prosecution, as the Commissioner intends to have every person comply with these requirements.

SUMMER HOTELS.

Special attention of the Inspectors of the Departments has been directed to Summer Hotels, in their respective districts at this season of the year, so that the large number of inmates may be afforded adequate means of protection from fire.

BOILER INSPECTION.

Reports covering the inspection of 18,037 boilers were received during the year 1913 by the Department.

INDUSTRIAL DIRECTORY.

Progress is being made in compiling the Industrial Directory. This Directory will contain full information pertaining to each particular industry, such as names and addresses of all manufacturing establishments, Coal Mining Companies, Public Service Companies, Manufacturers' Associations, Labor Organizations, Building Trades or Chambers of Commerce and the products of the different establishments. As this will be the first Industrial Directory ever published in this State efforts are being made to place it in the hands of the public at an early date.

DUPLICATION OF REPORTS.

The Commissioner has made arrangements between the Bureau of Statistics and the Bureau of Railways in the Department of Internal Affairs, The Department of Mines, The Public Service Commission, and the Department of Labor and Industry, whereby it will not be necessary for manufacturing establishments to render the same reports concerning production and accidents to each of these different departments. One report will now suffice for all departments, so that the duplication of reports and time is saved the manufacturers.

It was also arranged that the heads of the bureaus of the different States and National Government hold meetings with the idea of finally adopting standard forms of reports so that manufacturers may be saved the labor and expense of making different kinds of reports required by law covering the same subjects.

AMOUNT OF CORRESPONDENCE.

On an average, 300 pieces of mail matter are received daily and over 400 sent out.

INSPECTION OF CIGAR FACTORIES.

The Department has been making special investigations of cigar factories throughout the State. It was found that many of the operatives placed the tips of the cigars in their mouths to facilitate wrapping and in many instances bit off the loose ends with their teeth, instead of using knives. Inasmuch as this practice was anything but a sanitary one, both from the standpoint of the operative and the smoker, the Commissioner issued a notice that this practice must be stopped. It is helpful to know that manufacturers are co-operating by issuing orders prohibiting the same and posting notices to that effect.

INDUSTRIAL SURVEY.

An industrial survey of textile manufacturing establishments at Bristol has been started, and so far, medical examinations of hundreds of operatives have been made for the purpose of determining their physical condition. This survey when completed will give considerable data which has never been compiled concerning textile industries.

SOME PREVENTABLE FATAL ACCIDENTS.

1. Teamster: Accidentally walked through elevator shaft door, instead of receiving room door. Fell down shaft and was killed.

All shaft-way entrances should be provided with gates.

2. Laborer: While working in sewer man-hole under trestle, engineer of locomotive, not knowing he was in hole, blew off steam, scalding him.

A warning flag above the man-hole would have notified the engineer of this man's presence.

3. Laborer: Attempted to put belt on pulley with a piece of wood. The wood slipped and struck him in the stomach.

Belts should not be replaced when shafting is running.

4. Painter: While painting roof of a shop from a scaffold one of the timbers broke, dropping him to the ground and fatally injuring him.

The use of make-shift material for platforms and scaffolds should never be allowed. All timbers should be sound and of suitable size.

5. Machinist: Temporary opening in steel floor had been covered with planks. Repair man removed covering to replace permanent floor. While he was gone for material, man fell through the hole and was killed.

All floor openings should be solidly covered or guarded by a substantial railing at all times.

6. Helper: Raised elevator gates, and not seeing the elevator, reached in the shaft with his foot and tried to feel whether the elevator was there or not. In doing so, he lost his balance and fell to the bottom of shaft.

A light at the elevator entrance would have prevented this death.

7. Oiler: Oiling line shaft when clothing was caught by dead end of shaft, and he was instantly killed.

All dead ends of shafting should be encased or removed.

8. Rigger: Was placing a steel plate in the side wall of a bin. The plate was guided by a hand line which broke and the man, who was behind the plate, was knocked to the floor below when the plate swung in.

All tackle and rope should be regularly and carefully inspected and should not be used if found defective.

JOINT COMMITTEES ON SAFETY STANDARDS AND REGULATIONS.

The voluntary committees which drew up the proposed rules and recommendations are given below.

The first two and the last one of these committees were gathered together by George S. Comstock and James C. Cronin, members of the Industrial Board, under the direction of the Commissioner, who appointed the former to act as Chairman. The Motion Picture Committee was gathered together by Chief Inspector Lew R. Palmer, also under the direction of the Commissioner.

COMMITTEE ON WOOD—WORKING TOOLS.

Mr. H. W. Forster, Independent Inspection Bureau, Philadelphia, Pa.

Mr. Carl M. Hansen, Secretary, Workmen's Compensation Service Bureau, New York City.

Mr. H. W. Scott, Cramp Ship Building Company, Philadelphia, Pa.

Mr. L. M. Watson, A. B. Farquhar Company, York, Pa.

Mr. John H. Frank, Middletown Car Company, Middletown, Pa.

Mr. Lew R. Palmer, Chief Inspector, Department of Labor and Industry, Harrisburg, Pa.

COMMITTEE ON MACHINE TOOLS.

Mr. Edgar G. Thomas, Baldwin Locomotive Works, Philadelphia, Pa.

Mr. M. M. Sheedy, Pennsylvania Railroad Company, Philadelphia, Pa.

Mr. John E. Spencer, Link Belt Company, Philadelphia, Pa.

Mr. Edward Keenan, International Association of Machinists, Philadelphia, Pa.

Mr. C. S. J. Morgan, Jones & Laughlin Company, Pittsburgh, Pa.

Mr. William P. Eales, Travelers' Insurance Company, Hartford, Conn.

Mr. Lew R. Palmer, Chief Inspector, Department of Labor and Industry, Harrisburg, Pa.

COMMITTEE ON MOTION PICTURE THEATRE STANDARDS.

Mr. Edgar A. Wiemer, President, Pennsylvania State Building Code Commission, Lebanon, Pa.

Mr. Edwin Clark, Chief, Bureau of Building Inspection, Philadelphia, Pa.

Mr. S. A. Dies ,Chief, Bureau of Building Inspection, Pittsburgh, Pa.

Mr. W. Clarence Beatty, Owner 347 Fifth Avenue, Pittsburgh, Pa.

Mr. L. W. Rittenhouse, President, Pittsburgh Exhibitors' League Protective Association, Pittsburgh, Pa.

Mr. James Delves, Secretary, Motion Picture Exhibitors' Association, Pittsburgh, Pa.

Mr. George W. Bennethum, Inter-State Film Co., Reading, Pa.

Mr. Samuel F. Wheeler, Philadelphia Exhibitors' League Protective Association, Philadelphia, Pa.

Mr. M. H. Hite, Pennsylvania Federation of Labor, Harrisburg, Pa.

Mr. W. T. Stewart, American Seating Company, Philadelphia, Pa.

Mr. C. Harry Kain, Architect, Harrisburg, Pa.

Mr. William H. Hoffman, The Hoffman Company, Architects, Philadelphia, Pa.

Mr. J. S. Mallory, Fire Marshall, Philadelphia, Pa.

Mr. J. William Morgan, Deputy State Fire Marshal, Harrisburg, Pa.

Mr. Wm. Walter Johnston, Supervising Expert, Pennsylvania State Building Code Commission, Lebanon.

Mr. R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg, Pa.

Mr. J. H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg, Pa.

Mr. Lew. R. Palmer, Chairman, Chief Inspector, Department of Labor and Industry, Harrisburg, Pa.

Mr. T. J. Gould, Secretary, Department of Labor and Industry, Harrisburg, Pa.

COMMITTEE ON TRANSMISSION OF POWER.

Mr. Edward Keenan, International Machinists' Association, Philadelphia, Pa.

Mr. William P. Eales, Travelers' Insurance Company, Hartford, Conn.

Mr. M. M. Sheedy, Pennsylvania Railroad Company, Philadelphia, Pa.

Mr. C. S. J. Morgan, Jones & Laughlin Company, Pittsburgh, Pa.

Mr. F. J. Oakes, Link Belt Company, Philadelphia, Pa.

Mr. Jacob Lightner, Supervising Inspector, Department of Labor and Industry, Philadelphia, Pa.

Mr. Lew R. Palmer, Chief Inspector, Department of Labor and Industry, Harrisburg, Pa.

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MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

JULY, 1914

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PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin Acting Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; John L. Butler, Statistician; Collectors of Statistics; clerks, etc.

Richard M. Pennock is Chief of the Division of Accident Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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FOREWORD.

It will be noted that this issue of the bulletin continues the presentation of the rules and regulations on safety submitted to the Industrial Board for adoption by voluntary committees of employers, employees, and experts. Those having suggestions in the way of amendment to these proposals are requested to address the Department at their earliest convenience and, if they care to do so, to be present at the hearings of the Board.

Last month the bulletin gave quite a full description of proper organizations for fire prevention, fire fighting, and fire drills. This month it contains the outline of a suitable industrial safety organization. It may be noted that normally the same man can act to advantage as chief of both of these organizations. The Department has called for a specific representative from each industrial establishment to act as an intermediary between it and the Department. Usually the person who is chief of the safety and fire organizations may be best designated as the representative. The advantage is obvious, as to this man should go the publications and messages of the Department relating to safety and health, and from him may be obtained information and suggestions which will aid the Department in promoting its work to the best advantage.

This issue begins the publication of the transactions of the conference held some time ago at Harrisburg, between employers, employees, and the Department. The presentation will continue until such parts of the transactions as are of use are included. It is to be understood that those who took part in the Conference spoke either for themselves alone or the associations which they represented. With the exception of the Governor, the speakers had no other official connection with the Administration or the Department. The remarks at the Conference contain many interesting suggestions to employers and employees, and it is believed that their publication may prove worth while.

JOHN PRICE JACKSON.

ADDRESS BY HIS EXCELLENCY, THE GOVERNOR, HON. JOHN K. TENER.

"It is a genuine pleasure to welcome you as representatives of labor and industry, and it is a source of gratification to recall that the occasion for this conference grew out of a new law passed at the last session of the Pennsylvania Legislature. Until recently the rapid depletion of the natural resources of the United States had *not* become apparent. There was an abundance of raw material and of labor with which to manufacture it into such various commodities as the times demanded. Furthermore, the nation's natural resources were so rich and vast as to seemingly defy exhaustion. Consequently, recklessness and extravagance in the use of this wealth followed. Now a halt has been called. Economy must be practiced. Competent labor is no longer plentiful. The loss of a few skilled men through accident or ill health is a serious matter. Many raw materials are scarce and conditions are more like that of the foreign and older nations where their survival has absolutely depended upon conservation of energy and utilization of resources along true economic lines.

"I have coveted for Pennsylvania, economies in industrial welfare affairs comparable with the best accomplishments of other nations. I should like to see irregularity in times of employment entirely done away with. I should like to see the physical capacity and the skill of the worker enhanced *all* along the line. This would mean not only an increased wage but an addition to the wealth of the community. I should like to see the health of the employee improved and his safety assured. Compensation for accident is another economic consideration which aids the worker and his household, as well as the manufacturer, and not least of all, the public at large. Few subjects could be more worthy than those which during this meeting you will discuss, including how best to stop waste of material and energy; how to prevent the loss of life, limb or health and how to better all of the conditions with which industrial life is surrounded.

"I would call to your attention that in organizing the new Pennsylvania Department of Labor and Industry, the Commissioner and his staff were selected principally from the members of the engineering profession. This followed logically because the work of the Department will fall largely within a well defined branch of modern

engineering. I appreciate why it is fitting that this industrial welfare and efficiency conference should be held under the auspices of the Engineers' Society of Pennsylvania. In giving my approval to the Commissioner of Labor's plan to reach the manufacturers and laborers of the State through the agency of the engineering profession, I knew that a precedent was being established. One cannot visit the creditable exhibit of machinery and mechanical devices for assuring safety to workmen and increasing the quality and quantity of output given, as a part of this convention in a separate building, without being impressed with the strides made in inventions and the value of the co-ordination of effort. There has been too little of this coming together of the various branches of engineering. The activity of engineers extends into so many fields as to be commonplace. It is only when we stop to think, that we note to what great extent every member of society is indebted to this profession. A thousand and one comforts of the household are due to the inventor's genius, the manufacturer's enterprise and the mechanic's skill. Improved transportation facilities on land and water have called into existence a number of special lines of engineering not one of which modern civilization could do without. The making of artificial material, followed by advancement in construction methods, has worked a revolution observed by all of us of this generation. And so there are many kinds of engineers and there are many societies—one perhaps for each branch of engineering—but I was glad to ascertain that the Engineers' Society of Pennsylvania was established on foundations broad enough to include them all. Under such fortunate auspices the new Department of Labor and Industry is introduced to the people of the State, and through the co-operation which this relationship seems to vouchsafe, a great and good work of lasting benefit should be wrought."

SAFETY ORGANIZATIONS FOR INDUSTRIAL ESTABLISHMENTS.

The need of safety organizations at the present day in all industrial establishments employing labor is well recognized. It is understood that such organizations can more than pay for themselves by increased plant economy, without counting the primary purpose—the saving of human life and limb.

Accidents are in large measure the result of lack of knowledge or attention on the part of those connected with the establishment. Therefore, the safety organization should not only be given the duty of discovering dangerous places and safeguarding them, but should also have charge of study and educational conferences promoted for the purpose of calling attention to hazards which should be avoided, formulating rules for safety, etc.

It is, of course, recognized that a suitable organization for any particular plant must be dependent in a large measure upon the character and size of the establishment. Therefore, detailed rules which will fit all conditions are difficult to make.

One rule, however, which is well worth following, is that the head of the safety organization should be one of the principal officials of the establishment and that he should have a large representation of the hand workers on the shop committees. This follows from the fact that the work is and should be regarded as of the utmost importance to the success of the plant. The Commissioner of Labor and Industry recently wrote manufacturing establishments in the State asking them to appoint a representative to act as a connecting link between the Department and the establishment. He suggested that this representative might to the best advantage be the head of the safety organization. This suggestion is now emphasized, with the addition that it would be well to have the head of the safety organization serve also as the chief of the plant fire department and fire drill division. The bulletin of the Department for June gives a full description of suitable organizations for the latter purposes. Those interested in the organization of safety departments in industrial concerns will find the following general statements put forth by the National Council of Industrial Safety in one of its bulletins to be of excellent value. This outline was prepared as the result of conferences of many of the best safety men of the country:

THE WORK OF A SAFETY ORGANIZATION.

"The form and character of any organization must naturally vary as the work to be performed varies; hence the work to be done by

a Safety Organization should first be considered before determining what the form of organization should be.

"Safeguarding and Education comprise the task of any safety organization, all of which naturally requires efficient planning, direction and supervision.

"In SAFEGUARDING there are involved among others the following essential elements:

1. A study of hazards incidental to the use of equipment and machinery;
2. Adoption of Standards;
3. Inspection for—
   (a) Need of safeguards;
   (b) Installation of safeguards;
   (c) Maintenance of safeguards;
   (d) Use of safeguards;
4. In new construction or replacement, checking in drafting room or purchasing department.

"In EDUCATIONAL work there are involved among others the following essential elements:

1. A study of hazards incidental to operations;
2. Adoption of operating rules covering safe method of doing work;
3. Instruction of new men as to hazards and rules;
4. Interesting the men;
5. Providing bulletin boards, in the several departments, for the posting of safety orders, rules and information.

FORM OF SAFETY ORGANIZATION.

"The existing working force of every industrial or transportation concern, whether large or small, is adaptable very readily to an Accident Prevention organization. No new employees are required unless it be in the case of very large concerns in which it might be necessary to select some person to devote himself exclusively to the inspection work.

"In any form of organization created, the following elements are essential:

1. A Safety Inspector (who in a small plant may perform other duties). He should,
   (a) Inspect—
      (1) For need of safeguards;
      (2) For installation of safeguards;
      (3) For maintenance of safeguards;
      (4) For use of safeguards;
      (5) For unsafe practices;
      (6) For plant cleanliness;
   (b) Have charge of details of all safety work;
   (c) Receive all reports, recommendations and suggestions;
   (d) Keep all necessary records.

2. A Central Committee of Safety composed of plant superintendent or his assistant (chairman), safety inspector (secretary), and three or more high grade department superintendents, foremen or workmen, which should,
   (a) Have general charge and supervision over safety work;
   (b) Pass on all controverted matters;
   (c) Gather all available information;
   (d) Establish standards for safeguards;
   (e) Promulgate rules for safe operation;
   (f) Outline education campaign.
3. Workmen's Committees; consisting of three to five workmen, appointed and changed periodically.
   They should,
   (a) Make inspections;
   (b) Investigate accidents in their several departments;
   (c) Render written reports on forms provided for that purpose.
4. Foremen; each foreman should,
   (a) Enforce safety rules adopted;
   (b) Be held responsible for the safety of his men;
   (c) Investigate accidents, reporting causes, and suggestions for method of preventing recurrence, on forms provided for that purpose;
   (d) Make frequent inspections of his department;
   (e) Render weekly written reports on forms provided for that purpose.
5. Meetings of foremen—held monthly to discuss safety matters.
6. Workmen; Each workman should be educated and interested in Safety Matters. This work involves,
   (a) Instruction of new men;
   (b) Familiarizing of men with rules;
   (c) Interesting the men through bulletin boards, prizes, etc.;
   (d) Discipline."

AN OUTLINE OF THE SAFETY WORK OF THE E. I. duPONT deNEMOURS POWDER COMPANY.

(The following article was prepared by Mr. H. G. Haskel concerning the safety organization work of the E. I. du Pont de Nemours Powder Company. It is efficient for this purpose and includes suggestions of a practical nature which should be of value to plants of a different character).

In considering the safety work of the duPont Company it must be remembered that its organization and operating conditions differ materially from those of the majority of other large corporations. Their works though very considerable in number and located throughout the country employ comparatively few men. On the other hand the areas are very large and the buildings though small are particularly numerous and widely separated. The number of men employed in actual contact with explosives is only a comparatively small part of the total operating force, and in this branch of the manufacture the risks are quite special and have been the subject of careful study for a great many years. Elsewhere the possibilities of injury are those that would occur under similar operating conditions in other lines of manufacture. In fact, it can be stated that the number of injuries from explosives forms a very small part of the total injuries occurring annually.

The organization for Safety is in general as follows:

For each of the three operating departments engaged in the manufacture of the three main classes of products there is a Safety Commission of from three to seven members, the number being dependent on the size of the department in question. The largest commission is composed of four works superintendents who alone have the power of vote and who are changed from time to time as they become thoroughly conversant with safety work, two advisory members (one being the company's physician and sanitary expert and the other a representative from the Engineering Department) and a permanent Chairman who is an engineer and who as joint Chairman of all three Commissions is enabled to guide the work of the Commissions along parallel lines as far as this is practicable. Other departments, such as the Chemical, Legal, Purchasing, etc., are called upon in an advisory capacity as seems necessary. The large representation from the works themselves through the medium of their superintendents is a guarantee of their ready co-operation in the work.

The function of these Commissions is advisory only, their recommendations being accepted and put in force or rejected by the Di-

rector of the department in question; the works and other departments being furnished with loose-leaf binders in which the recommendations are filed. A period of thirty days following the issue of recommendations, however, is allowed for the receipt of any objections to the rulings. These, if considered reasonable, are then referred back to the Commission. After this period the works are expected to take action on the approved recommendations through requests for appropriation, the details of the work, if of major character, being worked up by the Engineering Department.

The Commissions act as clearing-houses for all classes of suggestions on safety, sanitation and first-aid. Major questions only are considered by them at their meetings held twice a year, minor matters and, in fact, all details of safety which have not already been accepted as standard practice being handled by the Chairman's office, subject to the approval of the Directors.

The Chairman's office visés the injury reports emanating from the works, taking up by letter such questions as pertain to further information on injuries, the adoption of additional safeguards, the bulletining of accidents to the works, etc. Monthly reports reviewing all injuries are issued, also semi-annual reports on the number, seriousness and cost of injuries, as well as an annual report on the cost of the Safety work.

Under the Chairman's direction an annual safety and sanitation inspection of a very careful and scrutinizing character is made of all works, and detailed reports issued to the Directors. Bids, specifications and purchasing requisitions for machinery, in which the requirements for safety are specified, are examined, as are also practically all projects for new construction and major repairs. In collaboration with the Engineering Department, drawings are checked for safety and standards of safety prepared and circulated in so far as it is practicable to do so. The findings of other permanent committees or commissions such as those engaged in the standardization of machinery and the standardization of purchases are also reviewed.

In the Chairman's office literature for the "Safety First" bulletin boards is prepared, "Safety Slips" for distribution with the pay checks, "Safety First" calendars, booklets on safety, etc. These duties have also included open-air talks to the works employes, occasional rallies at the works with moving pictures and lantern slides, and somewhat similar activities at the annual Superintendents' Meeting. Periodicals, books, etc., are reviewed and close touch kept with the work of other companies, states, associations, etc.

At practically all works employing over 50 men, Safety Committees have been organized, consisting of three men appointed in rotation

from the rank and file, and not above the grade of house foreman. These committees make a monthly inspection of all parts of the works, submitting reports to the superintendents who act upon them as they deem fit, copies being forwarded to the Chairman of the Safety Commissions. These committees are assisted by occasional suggestion sheets issued from the Chairman's office calling attention to possible dangerous conditions, and they are further stimulated by the presentation of a "Safety Committee" watchfob enamelled on silver as badge of office. As much time as necessary is allowed for these inspections, though no extra compensation is given, and all employees are urged to co-operate with their committees.

At the larger works, weekly staff meetings are held of which the discussion of recent injuries forms an important part. This is considered to be a very valuable feature and has done much to encourage the "Safety Habit." The works also make weekly and in some cases daily reports on certain safety appliances and less frequent reports on first-aid equipment, elevators, hoists, searches for matches, condition of clothing, etc.

The larger works are equipped with hospitals for first-aid where minor operations can also be performed if necessary by outside surgeons. Rather elaborate first-aid and medical equipments are provided on account of the distance generally separating the works from the nearest town, and in a number of cases works physicians are retained or employed outright. Works chemists while in training are furthermore required to take a course in first-aid so that their services will be available on the smaller works. Physical examination of employees and new applicants is now under trial at several points. Psychological tests are also under consideration.

Reports of injuries are made by the works on forms provided for that purpose. Responsibility is assigned as far as possible in accordance with the following list: unavoidable; avoidable—fault of employer, fault of injured, or fault of fellow-employe. All injuries, no matter how slight, are required to be reported. Comparisons are made on the basis of total injuries reported, total involving disability of one-half day or over, permanent total or partial disability, and death. Only about one-half of the total injuries involve disability as specified above. A comparison of these is made on the basis of an "injury factor" representing the total hours of disability as a per cent of total payroll hours, and it may be stated that during the year 1913 this figure for one entire operating department decreased from .705 in 1912 to .542, later figures for part of 1914 revealing a still further decrease, while the maximum and minimum for separate works was .99 and .02 respectively. When it is noted that the figure .542 represents an average of 1.6 days per year per em-

ployee, it will be conceded that the record is a good one considering the nature of the employment.

Consistent reductions can be attributed largely to the promulgation of the safety habit, although it is the policy of the Company to make its machinery and operations as safe as possible—even in the hands of the careless and negligent. On the other hand efforts are being made to have the separate works detect and remedy, as far as possible, their own dangerous conditions—in other words, independent action is encouraged. There is no doubt that the interest of the men once aroused will be retained, that the works will continue to progress and that a better record can be expected in future years.

A SAMPLE INSPECTION BULLETIN ISSUED BY THE E. I. duPONT deNEMOURS POWDER CO.

Safety Inspectors and Works Safety Committees are requested to consider carefully the following suggestions as of possible application to the works they are required to inspect:

1. Where work requiring constant attention is immediately in front of the operator, are electric lights so shaded as to throw the light directly on the work and not in the employees' eyes?

2. Are passageways, general gangways, entrances to elevators, stairways, etc., properly lighted during hours of darkness?

3. Are regular pathways obstructed by such things as guy wires from stacks or poles, hydrants, post indicator valves, etc.? Obstacles 5 to 6 feet above ground or 2 to 3 feet high are likely to be dangerous especially if they have sharp corners or projecting parts. A whitewashed plank attached to overhead obstructions attracts attention.

4. Are the heads of hand-tools, such as sledges, sets, chisels, etc., properly dressed, or are they used when badly mushroomed? Fragments are apt to fly from mushroomed tools and cause injury.

5. Are screw-drivers with insulated shanks used on electrical work involving "live" parts? The slipping of a screw-driver can cause a bad short circuit and the resulting arc or flash may cause extreme pain and temporary blindness to the observer.

6. Are glassware and similar breakables so stored on overhead shelves as to prevent the possibility of being jarred off?

7. Are heavy materials, especially tools, properly placed on storage shelves; for instances, sledge hammers should not be stood on their heads.

SAFETY AND WELFARE STANDARDS

SUBMITTED TO

THE INDUSTRIAL BOARD

OF THE

DEPARTMENT OF LABOR AND INDUSTRY

OF THE

COMMONWEALTH OF PENNSYLVANIA

ON THE FOLLOWING SUBJECTS:

COMPRESSED AIR
GRINDING AND POLISHING MACHINERY
FOUNDRIES
FORGING AND STAMPING MACHINERY
STATIONARY STEAM ENGINES
BAKESHOPS

NOTE: The following specifications are based upon reports on these several subjects submitted to the Industrial Board of the Department of Labor and Industry, by joint committees* composed of persons actively interested in the subjects.

Suggestions for improvements to these standards are cordially invited, so that proper corrections may be made before they are finally adopted by the Industrial Board as formal rules and regulations.

*See pages 47 to 48.

V—1.611 COMPRESSED AIR.

V—1.6115 AIR COMPRESSORS.

Air compressors shall be guarded by standard railings.

V—1.6112 PNEUMATIC HAMMERS.

Pneumatic hammers should be fitted with a device to prevent the piston from leaving the cylinder.

V—1.6113 PORTABLE PNEUMATIC DRILLS.

Every portable pneumatic drill and wood boring machine should be provided with an automatic device to stop the machine when the operator's hand is removed from the controlling valve.

V—1.6116 PIPE CONNECTIONS FOR COMPRESSED AIR.

A straightway valve shall be fitted in new installations where a stop valve is required in a pipe line between a compressor and its air receiver.

Where a stop valve is placed in a discharge line between a compressor and a receiver, a spring pop safety valve shall be placed between the compressor and such stop valve.

V—1.6114 AIR RECEIVERS.

The design and construction of air receivers shall conform to specifications approved by this department. A drain cock shall be fitted at the lowest part of each air receiver and the accumulated oil and water shall be frequently withdrawn. Air receivers shall be fitted with a fusible plug operating at not over 500 degrees Fahrenheit.

GRINDING AND POLISHING MACHINERY.

V—1.81 SOLID GRINDING WHEELS.

Solid grinding wheels shall fit freely on their spindles. They should never be forced on, nor should they be too loose. A clearance of .005 inch is recommended.

The lead bushings shall not extend beyond the sides of the wheels at their centers. Wheels shall be kept turned true, and work rests shall be kept adjusted close to wheels.

Wherever possible, a compressible medium, such as blotting paper, rubber, lead, etc., at least as large as the flanges, shall be fitted between a wheel and each of its flanges.

V—1.83 FLANGES FOR SOLID GRINDING WHEELS.

Each flange, whether straight or tapered must be relieved or recessed at least 1-16 inch on the side next to the wheel for a distance not less than 2-3 the diameter of the flange.

Both flanges in contact with a wheel shall, if possible, be of the same diameter.

New installations of tapered safety flanges shall have a taper of not less than $\frac{3}{4}$ inch to the foot on each flange, and not more than a 4-inch flat spot.

If but one safety flange is used, the taper shall be $1\frac{1}{2}$ inch to the foot.

The relation between the diameter of a wheel and the diameter of its tapered flanges (unless the wheel is protected by an approved form of hood) shall be such that not more than 4 inches of the wheel shall project beyond the flanges, and wherever possible only 2 inches of the wheel should project beyond the flanges.

The surfaces of wheels in contact with straight or tapered flanges, the surfaces of flanges in contact with wheels, and the compressible material between flanges and wheels shall be clean, smooth, and free from foreign material.

V—1.84 SAFETY HOODS FOR SOLID GRINDING WHEELS.

Substantial safety hoods, conforming, as far as possible, to the diameter of the wheel, safety flanges, or both, shall, where possible, be fitted to all grinding machines. The hoods shall be so designed as to leave exposed the least portion of the wheel compatible with the work in hand.

V—1.851 PRECISION GRINDING MACHINES.

Precision and tool room grinding machines shall be thoroughly guarded where possible. Proper clamping devices and hoods shall be applied to precision grinding machines where the diameter of the hole in the wheel will not permit the application of the specifications elsewhere set forth by this department.

V—1.812 CUP AND CYLINDER GRINDING WHEELS.

Cup and cylinder wheels shall be surrounded, as much as operating conditions will allow, either by a substantial safety hood or be retained by a clamp which encloses at least ¾ the circumference of the wheel. All specially shaped wheels shall be substantially guarded in an approved manner.

V—1.86 ARBORS, FIXED COLLARS AND MACHINES.

The protruding end of the arbor and its nut shall be guarded.

Arbor bearings shall be of ample size and shall be carefully adjusted and lubricated.

Arbors of floor, bench, and swing frame grinding machines, for wheels 12 inches or more in diameter, shall have fixed collars not less than ⅓ the diameter of the largest wheel for which the machine is intended. Floor and bench grinding machines shall be rigidly constructed and securely fastened to a suitable foundation.

The size of the wheel used and its speed should be governed by the instructions of the makers of wheels and of machines.

EYE PROTECTION.

Approved eye protection shall be provided to operators on grinding wheels if the operation involves the possibility of eye injury.

FOUNDRIES.

In all foundries, during casting hours, employees exposed to molten metal shall wear either goggles or other eye shields and either congress shoes, leggings, or other foot protection. Lace shoes shall not be worn by those exposed to molten metal.

Where chipping or cleaning of castings must be done in the molding room, and where the employees are thereby endangered, suitable screens shall be provided for their protection. All employees engaged in cleaning or in chipping castings shall wear goggles or other eye shields.

All gangways shall be kept clean and unobstructed at all times. All ladles, skimmers, flasks and gangways shall be dry when exposed to molten metal.

Core ovens should be provided with an unobstructed vent or flue.

Every portable hand pneumatic tool used in foundries should be provided with an automatic valve, to stop the tool, when the operator's hand is removed from the controlling valve.

Where scrap castings are being broken by a falling weight, a substantial enclosure shall be provided, and the operation shall be removed as far as possible from other work.

Cranes, elevators, hoists and conveyors, used in foundries, shall conform to specifications approved by this department.

Mixers, rattlers, grinding machines, core-making machines, sand sifting machines, and all other machinery used in foundries, shall have all gears, shafts, belts, and other exposed moving parts guarded, to conform to specifications approved by this department.

FORGING AND STAMPING MACHINERY.

V—1.402 PRESSES AND SHEARS (POWER).

A positive locking device shall be provided for presses and shears to prevent the machine coming into action prematurely or while the tools are being set. Where tight and loose pulleys are used, the locking device may be applied to the same instead of to the machine. Where direct motor-drive is used the switch shall be locked in an open position.

COLD WORK.

For presses used on cold work, a positive guard, which is controlled by the moving ram, is recommended. It shall be arranged to throw the operator's hands away from the danger zone.

SHEET METAL WORK.

Sheet metal presses for stamping, blanking, forming, trimming, shearing, and punching should have an inclinable bed or have an automatic or roll feed.

If neither false fingers, sliding dies, nor work holders using compressed air or suction for handling of the material operated on, are used, then guards of metal strips, metal netting, or plate glass to protect the operator are recommended; the same being either fixed or automatic.

A positive disengaging device for clutches is recommended.

V—1.403 HAMMERS OPERATED BY STEAM, AIR (STATIONARY) OR GRAVITY.

Gravity hammers shall be provided with positive locking devices so that when the ram is at the top or the bottom of its stroke, it cannot be accidentally moved.

Every steam and air hammer shall be provided with a safety cylinder cover (for catching broken rods, etc.) and shall be further provided with a valve in the main pipe line, which must be locked closed, preparatory to, and during the repair of the hammer or while changing dies.

CAUTION.

Extreme care should be taken in making and using hammer die keys to see that they are not only of suitable material, but that they are driven into place with due regard to the safety of the operator and of the neighboring workmen.

KEYS FOR HAMMER DIES.

It is suggested that hammer die keys be made of open hearth material, (Mn .40 to .50%; C .50 to .60%); that they be machined accurately to fit notches; and, that the ends be tempered to prevent spreading, upsetting, or breaking. The ends of keys shall be redressed when necessary.

SUGGESTION.

A metal notice SAFETY FIRST should be placed on rams of hammers, presses, shears, etc.

III—12.5 STATIONARY STEAM ENGINES.

NOTE.—These standards are to be considered as also applicable to pump engines and air compressors, if their construction is such as to bring them within the scope of these requirements.

AUTOMATIC STOPS.

It is recommended that an approved type of automatic engine stop, with speed limit device, be put on all stationery engines of more than 100 H. P. Also, that means be provided for the shutting down of engines from various stations.

No live steam connections should be made to a receiver without a reducing valve, set so that the pressure it permits will be well within the safe working pressure of the receiver and of the low pressure cylinder.

Each receiver shall be equipped with one or more safety relief valves of ample capacity, set so as to blow at a pressure well within the safe working pressure of the receiver and of the low pressure cylinder. These valves shall be provided with facilities for testing.

Jet condensers shall be provided with a vacuum breaker to prevent water from entering the engine cylinders.

Steam traps used to discharge water from steam separators shall be so installed that their operation will be evident.

Each engine shall be equipped with an efficient governor which will at all times automatically control the speed of the engine under varied loads. All belt or rope driven governors shall be equipped with a device for stopping the engine in case the belt or rope should break.

Valve gear shall be so arranged, or, other provisions shall be made, that in the event of the load being removed, the engine will stop if the governor would fail to act. (A broken belt stop will be considered sufficient for slide or four valve engines.)

Positive means shall be provided for blocking vertical and large horizontal engines, compressors, and pumps, during adjustments and repairs.

A safe method should be provided for turning over engines by hand.

Stationary stairs or iron ladders shall be provided for access to such emergency valves as cannot be reached from the floor or other safe place.

Platforms and walks on engines shall have standard railings and toe guards. This applies also to the engine bed alongside of the connecting rod or cross-head, when it is used as a footwalk.

All exposed moving parts of engines, compressors, and pumps, such as governor balls, fly wheels, shafts, gears, belts, etc., shall be guarded by standard railings or other guards approved by this Department.

Provision should be made for oiling all engine bearings, journals, eccentric crank pins, etc., from outside the guard railings.

BAKESHOPS.

(The drafting of a suitable code, rules, etc., for applying the bakeshop law in Pennsylvania was assigned by the Industrial Board to Mrs. Samuel Semple, a member of that Board, with instructions to call together a committee of representative bakeshop owners, master bakers, physicians, and other experts. The following represents the result of the work of Mrs. Semple in connection with this committee. The recommendations made will be shortly placed in the hands of the Industrial Board for consideration and action.)

PLACE.

Any person, firm, or corporation owning or holding a building which they desire to use as a bakeshop shall communicate with the Department of Labor and Industry, and shall demonstrate to the satisfaction of that Department, through the submission of plans and other information, that the premises in question are properly suited to such purpose. The opening of new bakeshops in cellars or basements is forbidden. If at any time hereafter it becomes necessary for the Department to close any bakeshop now in operation in a cellar or a basement, such premises may not be re-opened for bakeshop purposes.

All old basement bakeshops must have a height of at least eight (8) feet, windows above ground, and doors at least half glass.

The permission to bake in a kitchen may be granted when the conditions laid down by the department are met.

OPERATION.

Any person, firm, or corporation intending to engage in the baking business shall communicate with the Department of Labor and Industry, and shall demonstrate to the satisfaction of that Department that the proposed plant, and its preparation for operation, conform to the rules and regulations issued by the Department for the governance of such business. If such conditions have been met, the inspector may authorize the operation of said plant by a certificate of permission, to cover a period of six months. If, at the end of that time, the plant has been actually operated in accordance with such rules and regulations, the inspector may issue a certificate of approval, good for one year only, and revocable at any time for failure to obey rules and regulations.

No person, firm, or corporation shall open a bakery without first obtaining a certificate of permission from the Department of Labor and Industry. This permit shall specify the place in which business is authorized to be carried on. When a bakery is not kept in accordance with the rules and regulations, or when any part of such rules and regulations is violated, the Department of Labor and Industry may revoke such certificate, after giving not less than forty-eight

(48) hours notice. No person whose certificate has been revoked shall engage, or continue, in business unless a new certificate has been granted. A person whose certificate has been revoked for the third time may not be eligible for re-licensure.

SANITATION.

All rooms where baked goods are manufactured, stored, or offered for sale, or where the materials for such goods are stored, shall be separate and apart from any sleeping room, and shall not be used as sleeping or lounging places. Such rooms shall not communicate directly with any water-closet, stable, or stable yard. They shall be drained and plumbed in a sanitary manner. They shall be properly ventilated, in accordance with the requirements of the Department, and shall have sufficient light to prevent any place being operated entirely by artificial light. Windows shall open easily from both top and bottom. Those of the one-sash variety used in basements shall be hung on hinges. Doors shall be faced with metal, extending at least six inches from bottom on the outside to prevent the entrance of vermin. All water-closets shall be vestibuled, and permanently screened. All baking, mixing, storing, and sales rooms shall be thoroughly screened between April first and November first. The screening of shipping departments, where baked products are handled in packages, shall be arranged in consultation with the representative of the Department.

The floors, walls and ceilings of all baking, mixing, storing and sales rooms shall be tightly joined, and free from unevenness and crevices. The walls and ceilings shall not be covered with paper, nor with any substance that cannot be thoroughly cleaned. Walls, ceilings, and floors shall be kept in a clean and sanitary condition at all times.

All domestic animals shall be excluded.

Damp sweeping, damp dusting, and frequent scrubbing and washing with proper cleansing and disinfecting solutions shall be demonstrated to the satisfaction of the inspector. The Department of Labor and Industry shall have power to order that any room shall be cleaned in such manner as it may direct.

Kitchen bakeshops shall conform in general to the regulations outlined above. Walls and ceilings shall not be papered; floors shall not be carpeted. No arrangements for sleeping in the kitchen shall be allowed, and no laundry work of any kind shall be done there.

PERSONAL SANITATION.

No person suffering from a communicable disease shall be employed. Outer clothing used by bakeshop workers when on duty

shall be of washable material (preferably white), and shall be kept clean at all times. Drivers of wagons shall not be allowed to handle food with uncovered hands, nor with the same gloves used in driving. The habit of scraping hands and arms with a knife to remove the dough and batter (virtually a shaving process) is forbidden. The smoking, snuffing, or chewing of tobacco is forbidden. Plain notices shall be posted forbidding wetting the finger in the mouth, the open blowing of the nose, expectoration, the use of tobacco in any form (including snuff), and all other unsanitary personal practices.

DRESSING ROOMS.

Dressing rooms shall be provided separate and apart from all work rooms, or rooms where materials are stored, and apart from all water closets. If lockers are installed, they shall be of the sanitary metal type. Proper washing facilities, including hot water, clean towels, and soap shall be provided. Wholesome drinking water shall also be assured.

UTENSILS.

Stoves shall be connected by a pipe with the flue, and must be placed upon fire proof material. Ovens and stoves shall be so ventilated as to carry off fumes to the outer air. Ash receptacles shall be of fire proof construction, and no ashes shall be sifted in the bakeshop. Sinks large enough to permit the washing of trays, pans, bowls, and other utensils, shall be provided in all shops. They shall not be of wood, and the wall around them shall be finished with a water-proof substance that it may be properly cleaned. Sinks shall not be used as cuspidors. Moulding boards shall not be used as lounging places. Bread peels shall not be laid upon the floors. Clean and sanitary paper shall be used for all bakery purposes. Bread cloths shall receive special attention, and must be kept clean and sanitary.

SAFETY.

All buildings occupied as bakeshops shall conform to the building and fire risk requirements of the state and city. Skylights, floor openings, hoists, stairs, elevators, and other special features of the building shall be in accordance with standards approved by the Department of Labor and Industry. Boilers, engines, and electrical equipment shall be located, operated, guarded, and maintained in accordance with standards approved by said Department. All power transmission appliances, and all power working machines, all roller-fed machines, and all machines having a cutting, shearing, pressing, or squeezing action, shall be guarded in approved manner.

SUPPLIES.

All barrels and boxes containing supplies shall be kept covered.

DISTRIBUTION, STORE AND SALES ROOM, WAGONS.

Baked goods stored, or on display in sales rooms, shall be protected from flies, dust, and dirt. All trays, containers, baskets, hampers, and vehicles used in the handling and distribution of baked goods shall be kept clean and sanitary at all times, and shall be covered so as to exclude flies, dust, or other sources of contamination. Drivers shall not sleep in wagons used for the distribution of bread or other bakeshop products. Wagons shall be inspected, and shall conform to the standards established for the whole business.

YARDS.

Yards and entrances shall come under inspection, and, if necessary, boards of health shall be asked to enforce proper sanitation.

FREE EMPLOYMENT OFFICES IN THE STATE OF ILLINOIS.*

P. H. HART, Secretary of Labor Statistics, State of Illinois.

(The Peunsylvania Department of Labor and Industry has found much need of facilities for in greater measure lessening the uumber of unemployed. The following article strikingly illustrates what may be done through the medium of employment agencies.)

In dealing with this subject my aim is to be as brief as possible as "brevity is the soul of wit."

At the time of the panic of 1894 many thousands of men were vainly seeking employment and voluntary committees were engaged in the effort of finding work for them.

It was suggested that the State create Free Bureaus of this character and after a few years of crystallization of thought the law was passed in 1899 creating Free Employment agencies in cities of 50,000 or more inhabitants and three for the large City of Chicago. These latter agencies were placed on the North, West and South side divisions of that City.

These three offices were established August 2, 1899. The Peoria Free employment office was established July 1, 1901; East St. Louis office, October 1, 1907; Springfield office, July 26, 1909; and the Rockford office, October 1, 1913.

The 48th General Assembly amended the law, July 1, 1913, making it more comprehensive in its scope by allowing "contiguous cities containing 50,000 population or more" to establish a Free Employment Office.

This amendment allowed the contiguous cities of Rock Island and Moline to take advantage of the Act and an office was established there October 1, 1913, thus making eight Free Employment offices in the State of Illinois.

A weekly bulletin is issued by the Bureau of Labor Statistics which has charge of all employment agencies in this State and up to October 18, 1913 there were 718,907 male applicants for employment, and positions were secured for 447,485.

In the same period there were 294,226 female applicants, and positions secured for 209,485, or a grand total of 1,013,133 applications and 656,970 positions secured.

The employers of labor made 769,306 applications for help and 656,970 applicants were placed in this manner.

The fact that 65 per cent. of the applicants for employment secured work at absolutely no cost to themselves speaks for itself when the

*Paper submitted to the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

beneficial feature of the work accomplished is taken into consideration.

The average cost to the State for each position secured last year was 61 cents, and this includes all expenses and salaries allowed to all the agencies.

For the year 1912 the Illinois Free Employment agencies received 73,356 applicants for employment and 69,883 positions were secured so 95.2 per cent were taken care of, thus demonstrating that as the years go by and the value of the agencies' work is more appreciated, the employers of labor will call upon the agencies for help to a greater extent, and we honestly believe that before long, with the proper financial support, the Free Employment agencies will attain a greater degree of perfection.

The Bureau of Labor Statistics of Illinois is working in conjunction with those of Wisconsin and Minnesota to the end that all the Bureaus of the different states send a representative to Chicago sometime in December of this year, for the purpose of discussing the question of creating a Central Exchange. Such exchange will be a clearing house of information and will formulate plans for carrying on the work and making it permanent.

The cost would be small and each Bureau can pay its proportionate share towards its maintenance. Those questions can be discussed at the proposed meeting however, and I will not go into any lengthy argument about them.

The Supreme Court of the State of Illinois has decided that the Legislature was within its powers when it created these agencies and we expect that the next Legislature will certainly take ample care of these children of its own.

In conclusion allow me to say that I regret exceedingly that I cannot make these few remarks personally, but realize that at the present time boiled down, concrete facts are what this busy world of ours can find time for.

REMARKS MADE BY LABOR LEADERS.*

MR. EDWARD KEENAN, OF THE BUILDING TRADES COUNCIL, PHILADELPHIA, PA.

Mr. Chairman: I am a machinist by trade, but I came here as a representative of the Building Trades Council of Philadelphia. I have listened very attentively to the proceedings of this conference and I think I have learned something; the time spent here has been very profitable to me. If I understand correctly, this conference possesses no power, its only duty being to secure an expression of opinion from those participating, as to the best means of securing co-operation on the part of the employer and employee in the direction of eliminating some of the accidents that occur in our industries.

Judging from the remarks of some of the representatives of corporations and firms, I am led to believe that they have done all in their power to guard machinery, and employed every possible means to prevent accidents in this and other States in which they have plants or establishments. They seem to express a very great desire, that as far as possible, accidents should be prevented. They also appear to lay particular stress on the fact, that in many cases, the assistance of the workman is necessary to avoid these great sacrifices of life and limb. Now, Mr. Chairman, I do not know whether or not you were a workman, but I tell you there are so many duties imposed upon the average mechanic of to-day and his attention is distracted in such a manner, that it is impossible to impress on his mind that he should always be on his guard to prevent injury.

In the trade which I have followed, we have all sorts of systems; the premium, the bonus and the piece work are the leading ones. In some shops men are required to punch a time-clock when they start a job and also to ring up again when the job is completed. The quality of the work is another important matter. In the machine shop, men are required to maintain a high standard of accuracy, in some cases one thousandth of an inch is regarded as too great a variation. Also, a certain number of finished articles must be produced in a given period of time or the workman is in danger of dismissal. When you require such a test of a workman, how in the name of common sense can you impress on his mind that safety should be his first thought.

*At the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

I heard one of the speakers here, either yesterday or to-day, state that the average workman is afraid to do his work with the most approved appliances for safety, because he will be in danger of losing caste among his fellow workmen. I think this talk is foolish; I do not believe the average workman is so devoid of common sense as to refuse to use any device designed to protect him from accidents.

In some cases the failures of the workmen are responsible for accidents; on the other hand ambitious foremen and managers, in many instances should assume the blame. These officials are very often given a bonus or premium for an increase in production and a reduction in the costs, during a certain period of time. In their anxiety to make good in this direction, they very often insist that the workmen should proceed with their work, knowing full well that all the necessary precautions to insure the safety of the workman, have not been observed. I believe that we have at the head of the Department of Labor and Industry in the State of Pennsylvania, to-day, a man who is sincere and honest in his work. I think from what I know of him that his desire is to make a record for good in this department. He appears to be very anxious to be of some benefit to the workingmen and women of Pennsylvania.

But, Mr. Chairman, the display of interest here is no sure indication that he will have the proper support. The American people excell in many things, and when I say American people I refer especially to the people of the United States. In the first place, their workmen produce more than the workmen of any other country in the world; in the second place, they have more accidents in their mines, on their railroads, in their mills and industrial establishments than any other nation on earth; in the third place, they have more cases of tuberculosis, notwithstanding the fact that we have placards in almost every conspicuous place, calling attention to the rules to be observed, in order to prevent the spread of this disease. And last, but not the least marked characteristic of the American people, are these spasmodic outbursts of reform. Now, Mr. Chairman, I fear from my observations in this Conference, that this is one of those spasmodic outbursts of reform in the industrial establishments of the State of Pennsylvania.

I am of the opinion that the only way to make this work of permanent benefit is by law; a law that fixes a penalty. I feel that some of the men who are here to-day will forget, after they leave this place, what has been said and done, and will go back into the same old careless methods. If we have a law which fixes a penalty in the shape of an adequate compensation, for the man who has been injured, or the payment of a certain sum to the family of the workman who loses his life in following his daily occu-

pation, the employer will have constantly before him a reminder that it costs money to have accidents occur in his establishment.

During the sessions of this conference, I have heard the various speakers use dollars and cents as a basis, in computing the losses sustained by the employer and employee through the numerous accidents. The same method may be employed in determining the benefits to be derived by eliminating such accidents. This being true, there is no doubt that this same basis would be very satisfactory in framing a law to prevent accidents in the various establishments where men and women are employed.

The dollar seems to be the most prominent thing in the minds of the American people. Many instances can be cited to verify this remark. One in which the evidence is of a very pronounced character, was in the city of Philadelphia a short time ago. We have an ordinance in the city of Philadelphia, which provides that the floors of buildings shall be covered during the course of erection, to prevent workmen being injured by falling through or being injured by tools, bolts, nuts or other articles falling on them. On one large building erected in that city a short time ago, the contractor figured that it was cheaper to pay the fine four or five times during the erection of the building than it was to expend sufficient money to purchase the lumber required to cover the floors; 15 men lost their lives on this job, and the law was not compiled with until the men struck.

MR. ISRAEL LEVITSKY, OF THE UNION LABEL TRADES UNION.

I admired especially a statement made by a gentleman a few minutes ago when he reminded us that in the last twenty years we have made one-fifth of the progress of the world. I believe that this meeting is one of the proofs of the progress we are still making. It seems to me that it intends to convey to the minds of the people that those who are chosen to serve them for the best interests, feel that they owe it to the people to have a little conference, so that we can go ahead and co-operate. Considering it from that light, and that light alone, I feel that I can go back and say to the organization that sent me here, and that represents about twenty thousand working men, that we are making progress.

What is it that interests this Department most? It is a Department of the State Government. It does not take into its fold everything that interests the Commonwealth. Therefore as wide

as the subject may be to the man who specializes on the subject, it is still narrow to the man who has to work in the factory every day. This man has no chance to specialize on any subject. Perhaps he is not able to express himself as to just how he feels and as to just what he thinks, and does not stick to the subject; nevertheless those expressions are proof that the movement of the world interests him; that he means to take an interest in every avenue of the Commonwealth. This alone is proof of the progress we are making, and hope to make in the next twenty years. How are we going to progress in the next twenty years? I hope this advance will be in proportion to the last twenty years. It is not an injury to the world to advance, but it is an injury to go back. The working men are responsible for their own injury; the working men are responsible for their own deaths. Surely a man that is responsible for his own death is considered as a man who commits suicide, or rather his mind did not give him enough encouragement to continue to live. A man does not intentionally kill himself in the factory. He does not lie under a train in order to see how easily his leg can be cut off; he does not put his hand in the buzz saw to see how quickly it will take off his finger. I am inclined to believe, as this gentleman has expressed it, that the goggle that is given to the working man and is refused by him, must be a bad goggle. You do not look into all sides of the question. What condition is the working man in when he is hurt? Is he in a condition to think coolly, logically and consider all the facts in the case? What he thinks about is that he must get the work out or they will get somebody else to take his job. In this continuous drudging from morning to night, ten hours, twelve hours and perhaps longer, can you blame a man for doing something that may result in his own injury? You cannot blame him. You can only blame the condition that forces a man to work under such a terrible strain, under such a terrible discipline and the fear that he may lose the means of his support. They simply become accustomed to the danger and lose their fear, which results in injury. Surely that is the way they become accustomed to things, but it is not so in the beginning. It is not that they want to hurt themselves. It is the miserable condition that creates just these results, the miserable speeding up system in the factory. That is the miserable condition you did not consider to-day. Why is it that the trade unions have just a few less hours for the workers. The trade unionists want an hour for dinner. Why should the working man not have an hour for dinner? After he has worked for half a day he should have at least an hour to recuperate. Why is it that the manufacturers are not willing to allow the workingmen an hour at dinner and an eight hour

working day, eight hours to sleep, eight hours to work and eight hours to play? It seems that if he is so much interested in his safety he should also be interested in these other things. Is it any wonder that we are having so many people killed every year? They tell us that every four minutes a working man is killed and every four seconds a working man is crippled or injured. Think of the widows and orphans. I am a working man and I know what is good for me in this world. The working man must be safeguarded, but I want to tell you that your sympathy will never do it. Your legislatures will have to get together and you will have to do everything in your power, first by persuasion and then by force.

MR. HARRY J. STAUB, CIGAR MAKER'S UNION, NO. 316.

We have talked a great deal here about the prevention of accidents and that is all very good. As Brother Wright said, this is a place where labor will get a chance without fear of getting discharged for saying exactly what it thinks. There are many things we have touched upon which are of vital importance to the laboring man, but the one thing that has not been touched upon to any great extent is the matter of employment. I want to say that the majority of you people here are, as it is generally termed in society, well to do men. You have never been in the position that when you reached into your pocket, you found nothing but a hole. You have perhaps always had the dollar to buy the necessities for yourself and your loved ones, but I want to say, and say from personal experience, that the worst situation and most pitiful man in existence to-day is the unemployed man. There is no Bureau in this United States—Bureau of Labor Statistics, or anything else—that has ever done very much towards remedying this evil. The great cause of this you will say, is overproduction. It is not overproduction. It is under consumption and the cause of this under consumption is that the working man can only buy back one-fifth of his production with the wages he receives. Approximately $2,500 in wealth is produced by each working man each year. He receives $500, I think, in the 1910 census, and statistics to-day show that $512 is his average wage. That takes in clerical positions, paying $2,000 and less. If the average wage was $512, what chance has the ditch digger and the sewer digger,—among the most necessary adjuncts of society,—when he only receives a paltry $1.35 a day? The only possible way to remedy this is by the system of co-operation. We hear so much about co-operation between the employer and the employes in safety devices. We hear a lot about co-operation in

this, that and the other thing. Mr. Hoffman of the Prudential Insurance Company, touched the source of the evil closer than any one speaker here, and that was by suggesting removing the cause. There are many physicians in this meeting. I would not like to have one of those physicians prescribe for me if he would enter a house in which there was typhoid fever, and say "Yes, this man has typhoid fever," but would not hunt around and find a cess pool in the back yard. He would prescribe for the man, but not remove the cause of the disease. I would not like to have that man as a physician, for if he were a practical man, he would remove the cause. That is just what organized labor wants; they want the cause of this unemployment removed, and thus profit society. The shoe manufacturer to-day does not care if a train load of shoes gets wrecked fifteen yards away from his factory, because he is not manufacturing shoes for the reason that you and I need shoes, but he is manufacturing them for profit. Eliminate the profit system, and you will have solved the problem of the unemployed. When you (I presume you are a manufacturer, Mr. Chairman) manufacture your product, you manufacture it for profit, and under this system, of necessity you must. I don't blame you, nor any other manufacturer in this house, but I do say that the system must cease, if the working class in this country is to be considered as a necessary unit in society. We workingmen hold a different opinion, and of necessity must be of different opinions because we are employed in different trades. It is useless for a manufacturer to stand on that rostrum and tell me, a working man, what is necessary in my life for my existence, because he does not know. If one of you had a son and you wished him to become a lawyer, you would not send him to a blacksmith to learn that profession; you would send him to a law office and from there to college. Therefore, you manufacturers, you welfare workers and you people, who I believe are sincere, don't go to a book, a newspaper, and so on, and believe all that you read. You should go direct to the working man, and if he is an honest and intelligent working man, and I want to assure you that ninety-nine and nine-tenth per cent are intelligent and honest, they will tell you of their needs, and they will show you what it is to go home to a wife and four or five children without a copper in the pocket and without a job. They can tell you what is needed to remedy conditions, providing they are intelligent working men. We have in our ranks men who refuse absolutely at times to read things and study things, but if you people want to find out what the laboring class need and what they want, you should come to us. The Department of Labor and Industry has asked us for a chance to show what they can do for us. First, let them find out what we need, and let them ask us.

I thank you.

SAFETY AND SANITATION IN INDUSTRY.*

DR. FRANCIS D. PATTERSON

Director of the Department of Sanitation and Accident Prevention, Harrison Bros. & Co. and The J. G. Brill Co., Philadelphia.

Our country has been prodigal in the sacrifice of the health and in many cases, of the very life itself of its working men and women. The problem of sanitation and accident prevention is a serious one, both by reason of its accompanying mortality and consequent economic loss to the community at large, and also because the money paid in the settlement of personal injury cases and for loss of wages due to occupational diseases is an operating expense of material amount, and this can perhaps be best illustrated by a brief review of statistics.

In the two decades from 1891 to 1911, the operations of the railroads of this country caused the death of over 68,000 employees and in the same time, over 7,000 passengers were killed and almost 162,000 others were more or less injured and over 108,000 other persons were killed and nearly 150,000 injured. Further analysis of these figures shows that in the year 1912, one railroad employee was injured every four minutes and that another one was killed every one hour and forty-two minutes. The cost of these accidents to the companies amounts to the vast sum of nearly $18,000,000, a figure which would have been greatly increased had these cases been adjusted under the provisions of the Federal Compensation Law.

During the past year, more than 35,000 workmen lost their lives through industrial accidents, and this is one death for each quarter of every hour in the entire year and during this same time, there were over 208,000 non-fatal accidents, or one accident for every fourteen seconds for every day of the year. What an astounding sum of money these accidents cost, can be best expressed by stating that $250,500,000 is a low estimate of the loss to the community at large.

The civilized world stood aghast when the Titanic, with her name of ill omen, crashed into an iceberg and some 1,500 souls perished amidst the ice floes. An ever generous public subscribed more than $2,000,000 for the relief of those made dependent by the catastrophe and countless columns of every newspaper were devoted to every

*Address delivered before The Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

phase of the horror; but the vastly greater number of persons who are maimed or killed, by industry every month, passes practically unnoticed by both press and public.

To-day we are in the dawn of an era of conservation of all our natural resources, of which there is none more vitally important to the prosperity of this nation than the conservation of human life, especially at the most important period of that life from the economic point of view.

The causes of industrial accidents may be briefly stated as follows: First, unguarded dangerous machinery; second, ignorance of the employees as to dangerous conditions; third, recklessness on the part of the employees in ignoring such elementary safety precautions as having all passageways properly cleared of material, seeing that material is properly piled and the wearing of suitable clothing while at work.

Any campaign of accident prevention in order to be successful, must do several things. Experience shows us that mechanical safeguards properly placed around dangerous machinery will, in themselves, prevent 33% of industrial accidents, and it should be remembered that the essential of any mechanical guard is, that it will not only guard against accidents but, at the same time, be so practical as not to interfere with the necessary duties of the employees. In other words, this guard should be so effective that the employee can devote his time to his work and not have to concentrate his mind on the avoidance of accident to himself or to a fellow workman. Such a guard promotes efficiency and automatically increases the employees' production. The real keystone in any successful campaign of accident prevention, is to secure the co-operation of the employees in helping to prevent accidents, for by far the greater number of accidents are accidents to only one individual, and so it is essential to bring home to every employee, his individual personal responsibility in the prevention of accidents to himself and to his fellow workmen. We believe that it should be an axiom in every factory, that every machine requires a safe man to operate it, and we believe that this can only be accomplished by assuring ourselves that those who are accepted by us for employment are in good health at the time of their employment; that their health, while they are in our employ, shall be conserved and that they shall work in a factory which is adequately lighted and properly ventilated.

I am sure that no one will dispute me when I state that such employees, of necessity, will turn out a better finished product than can come from any factory where the working environment is the reverse of these conditions.

We give every applicant for employment a thorough physical examination and in this way, those who present the evidence of

a physical defect, which impairs their health or makes them more liable to accident, are barred from employment.

All employees are urged when they are ill, to consult the medical director on the company's time without charge, with the result that many ailments that might become more serious, are cured without loss of time to the employee, simply because they have medical treatment in the incipiency of the disease.

Every hazard has been studied with a view to its complete protection. Moving wheels or belts are guarded by wire-mesh guards. For all work, where the eyes are exposed to injury, glasses composed of a large plate of plain glass are provided and employees are not permitted to work without them. Furthermore, care is taken that every employee shall be instructed by his foreman in how to do his work safely, and we can but believe that our employees know that they must take care instead of taking chances, and we believe that all of them have acquired the safety habit which incidentally is the only habit that never injured anyone. Where we have some special danger, which we desire to call forcibly to the attention of every employee, we use a blue and yellow danger disc, and I presume that many of you will wonder why we have not adopted the red disc, the use of which is being urged by the United States Steel Corporation. We have not, because there are certain fundamental objections to the use of red for the danger signal and these may be briefly summarized, thus:

First:—To the large group of individuals who are color blind to red, a red disc conveys no warning of danger to their eyes; it is any shade from gray to black or green, if perceived at all. These persons are surely entitled to the protection which is denied them if the color red is used.

Second:—Red is a fugitive color; it is evanescent and it is difficult to distinguish in a poor light.

Third:—Red fades on exposure to sunlight, and unless repainted at frequent intervals turns white.

So we experimented and found that the best colors for a universal danger signal were yellow and blue. The reasons for this are:

First:—Yellow and blue are the only colors which give rise to a normal color sensation as soon as they become visible as colored. For this reason they can be seen at a greater distance in daylight and they are more easily distinguishable in a poor light than any other color or combination of colors.

Second:—All other colors appear either yellow or blue until they pass inside of the yellow-blue area of the eyes when they are recognized in their natural colors.

Third:—Yellow and blue are the most luminous colors of the spectrum.

Fourth:—Those rare cases where the ability to see yellow and blue are impaired will call them red or green and so receive a protection which the color red would not give them.

Fifth:—Yellow and blue are more permanent colors and quite fast to sunlight.

Every accident receives immediate treatment, as I am convinced it is the neglect of the apparently trifling injuries that makes them serious. The underlying causes of every accident are determined and then such measures are taken as will prevent the occurrence of a similar accident in the future. Information in connection with accidents and general information on the subject of safety, are disseminated to all employees through the medium of innumerable "Safety Bulletin Boards" placed in conspicuous places throughout the works. Then too, from time to time, safety posters are issued, these are printed on yellow paper with blue ink. These posters, the bulletins and the personal instruction of employees seemed to be all right as far as they went. The employees read them but they did not go far enough for they failed to reach that most important factor in the life of every employee,—the wife, the mother or sister, who makes the home,—and so we decided to make the effort to bring safety axioms directly there. We wondered which was the best way to accomplish it. If safety precepts were printed on either the back or the front of the pay envelopes, we believe they would not attract the desired attention, so we printed them on slips of paper and then wrapped them up with the wages inside of the sealed envelopes. They are printed in English and Italian, and we felt sure that any man who did not understand either of these languages would surely get it translated so as to assure himself that it was not a notice that his services were no longer required.

The phrases that we have used are:

Help us to prevent accidents. It is a duty you owe to yourself, to your family and to your fellow employees.

Sleep with your window open, foul air breeds disease.

Carelessness causes many accidents—always be careful about your work, and you will avoid accidents.

Safety should be the first consideration of all employees—in all cases of doubt always take the safe course.

Every employee should always report every unsafe condition to his foreman. Such reports are appreciated and due credit will be given for them.

It takes less time to prevent an accident than it does to report one.

The more you insist upon carefulness on the part of others, as well as exercise it yourself, the safer it will be for us all.

The employee who takes chances instead of taking care, endangers his fellow workers as well as himself.

The safe way may seem longer but it is really the shortest way in the long run.

To keep your body healthy you must keep it clean—a daily bath is a great preventer of illness.

Patent medicines never cured anyone—if you do not feel well consult the Company Physician, for whose services there is no charge.

The man who is always taking chances will sooner or later be taking a hurried trip to the hospital. The man who takes care is not injured and when in doubt always takes the safe course.

Avoid the drug clerk, who tells you what medicines to take, as you would a man with small pox; both are dangerous. If you are sick, consult the Company Physician.

Whatever work you do always do it in a safe way.

Always warn a fellow employee when danger threatens. Before crossing any tracks, always stop, look and listen.

A slight injury that is neglected may be followed by blood poisoning.

Acquire the safety habit, it is the only habit that will not injure you.

Haste makes waste and may cause an accident.

All injuries, no matter how small, should be immediately reported and receive the medical attention of the Company Physician. It is the neglect of small injuries that makes trouble.

The careless workman, who does things in an unsafe way, is a menace to his fellow workmen as well as to himself.

Nothing is easier to loose than good health, so do not hesitate to consult the Company Physician when you do not feel well.

Whatever you do, always do it in the safe way.

Always take care instead of taking chances.

Acquire the Safety Habit and practice it all during the year—it is the only habit that will never injure you.

Good health should be part of your capital—it is easy to lose and may be hard to regain, so when you do not feel well consult the Company Physician whose services are furnished to all employees without charge.

Never blow compressed air on anyone or fool with it, as you may kill someone.

If you will look where you are walking, you will find the shortest way to be the safe way.

In our study of the time of the accidents, we have found that the greatest number occur between 9 and 10 in the morning and 2 and 3 in the afternoon. What we have accomplished can perhaps be best expressed by the fact that the first year of our campaign shows a reduction of 69.7% in the number of our accidents.

In the production of lead salts and of paints Harrison Bros. & Co., have demonstrated that under the precautions which they have established, the manufacture of lead products ceases to be a dangerous trade. Care is taken in the examination of those who are applicants for employment in that portion of our works where they may come in contact with lead, that the applicant is over the age of 21 years, that he is in good physical health, that he is not an alcoholic nor suffering from tuberculosis, that his nervous system is normal and that he has not rheumatism, kidney disease, bad teeth, impaired digestion, malaria or syphilis.

Dust is the curse of the lead industry for its minute particles are often surrounded by a layer of moisture which renders them more liable to absorbtion by the respiratory mucus membrane, so it is essential that dust in the various processes of manufacture be eliminated. Every employee is physically re-examined at weekly intervals as a further means of conserving his health and everything is done in the way of example, assistance and teaching, to encourage cleanliness on the part of the employee, for co-operation on their part, is as essential as anything that can be undertaken for their benefit.

They are provided with clean overalls changed often and kept clean without charge in the Company's power laundry. There is every facility of bathing and washing, and in order to encourage the former, a cash payment of 15c is made to the employees for every bath which they take at the conclusion of the day's work.

A suitable lunch room is provided, and the employees of the lead department are given all the milk that they can drink at the noon hour.

In view of the fact that the most important avenue for the absorbtion of lead is the stomach, care is taken that all employees wear an efficient respirator while they work, and that they wash their mouths as well as their hands and faces before eating.

There is not time in which to discuss some of the many experiments which have been performed in regard to the toxicity of the various lead pigments, but I think too much stress cannot be laid upon the fact that, despite the claims which have been made to the contrary, the basic sulphate of lead is a poison, and that the same care should be exercised in handling it as is necessary in the manufacture of the other lead salts.

Our experience has been that the casual laborer is a peril not only from the standpoint of sanitation but from his greater liability to ac-

cident, and we have further found that one of the best methods of conserving the health of our employees is by the substitution of piece work for day labor.

To-day the air is filled with articles in magazines and in newspapers on the so-called lead menace, and paint manufacturers are held up to the unthinking general public, as operating one of the most dangerous of the modern industries, an untruth spread broadcast for personal gain, and I presume notoriety. I need hardly assure you gentlemen, that the so-called lead menace, as far as the industry we operate is concerned, is a fabricated myth, and that there is no industry through-out this broad, fair land where more is being done for the safety and the health of its employees than in this industry.

We have conserved the health of our employees and what we have accomplished is due to the president of our company, our vice president, and our general superintendent, and as we go out of the doors of our factory, we take a farewell look at our ever illuminated clock and its slogan of "Safety Always" and we think of those lines of the poet.

"Now here is to the task that we may not shirk,
For the toiling thousands plead;
We must give them comfort while they work,
And help in every need.
We must lend them strength if their souls be weak,
And to teach them how to live,
Nor let us all to merely seek
Returns for all we give,
As we turn our eyes to the glancing rays
Of the golden dawn of better days."

SUMMER CANNING.

The time is now here for the opening of the canning season and the rush of summer work for the canneries of Pennsylvania has begun. It is very important that all concerned in this industry bear in mind that proper safety devices on all dangerous machinery should be in place and that sanitary conditions should be maintained. Besides, the methods used for the disposal of waste in the different operations of canning should be given careful consideration, in order that the employees may have safe and healthful working conditions.

In canneries where women are employed particular attention shall be given to the necessity of complying with Section 9 of Act No. 466, known as the "Woman's Act," which is as follows:

"Every person employing or permitting females to work in any establishment shall provide suitable wash and dressing-rooms and water-closets, or privies, for their use, so located as to be accessible to such females. In any establishment in which males and females shall be employed or permitted to work, separate wash and dressing-rooms and water-closets, or privies, shall be provided for each sex; and such wash and dressing-rooms and water-closets, or privies, for each sex, shall be entirely separate from those provided for the other sex. The water-closets or privies provided for females shall be in the ratio of one for every twenty-five females employed or permitted to work. All water-closets or privies shall be properly lighted, and shall be separated from the rooms in which employees shall be permitted to work by partitions extending from floor to ceiling, and the compartments containing such water-closets or privies shall have sufficient direct outside ventilation, by window or other means. The entrances to the water-closets or privies shall be screened from the rooms in which employees work, and from the entrances to the water-closets or privies provided for the other sex, by screens or partitions at least six feet high. All water-closets or privies shall at all times be kept clean, sanitary, and free from all obscene writing or marking."

Proper ventilation shall be maintained at all times and there shall not be allowed any accumulation of steam or odors which might impair the health of the workers.

Where children between the ages of fourteen and sixteen years are employed, it is necessary that employment certificates be kept on file and all other provisions of the so-called Child Labor Act complied with.

CERTIFICATES NECESSARY FOR MINORS.

There seems to be a mistaken impression prevailing throughout the different sections of the State that the law does not require children between the ages of fourteen and sixteen years to have employment certificates during the vacation periods and that it is not mandatory for employers to find out if the children they employ have such certificates so long as there is no school session.

Employers have, in some instances, taken on children as temporary help during the summer rush and have not made any effort to see that the provisions of the Child Labor Act have been complied with. They evidently thought that the law did not require certificates so long as the local schools were not in session. The law, however, makes no exceptions for the summer nor any other vacation periods, Accordingly, the attention of employers is directed to the fact that it is necessary for them to have on file employment certificates for

all children between the ages of fourteen and sixteen years, in their employ during any period of the year.

DANGER OF HIGH PRESSURE IN HEATING SYSTEMS.

In making inspections of different factories throughout the State, it has been found, in some instances, that firms are using the steam from their boilers in the heating apparatus, without using proper reducing valves. In one factory a small wash and dressing room, where the employees were accustomed to take shower baths, was heated by a radiator in the middle of the room. Boiler pressure was maintained on this radiator and had a break occurred while the men were changing clothes or taking a bath, they would have been severely scalded, if not fatally hurt.

Under no circumstances should steam under high boiler pressure be allowed in radiators used for heating purposes. Proper reducing valves should be placed in the steam lines, as near to the boilers as practicable.

HEAD LICE, A FACTOR IN EFFICIENCY.

During the inspection, in the last few months, of factories employing women and girls, the fact that many such employees had head lice was very frequently noted.

This condition is regarded by most people as merely a matter of general untidiness and neglect, while in reality the effects may well be considered industrially.

In its mild form, it is a source of irritation, annoying to the person having these insects and impairing their efficiency. No one can put forth his best efforts when subject to any continuous discomfort, even though it be but a constantly itching head. In long neglected cases, the scratching causes an eczematous condition in which the scalp is covered with abrasions or crusts. This state is the more difficult to correct, for the first step in effecting a cure is to rid the head of the lice and this is naturally more difficult to accomplish with the scalp covered with sores. Any one working in a factory in this condition, not only impairs his own efficiency, but also subjects all those associated with him to a similar condition.

Employees should carefully observe the condition of their fellow workmen, for since lice can be so easily communicated to a second person, it is very necessary that close contact with the infected party, as well as a promiscuous interchange of hats or other head coverings, be avoided.

The daily use of a fine-toothed comb should rid any one of these insects in two weeks or less. As long, however, as fellow employees neglect their condition, constant watchfulness is needed to prevent a recurrence.

SECOND PENNSYLVANIA CONFERENCE ON INDUSTRIAL WELFARE AND EFFICIENCY.

About the middle of November of this year there will be held the second Pennsylvania Conference on Industrial Welfare and Efficiency in Harrisburg. This Conference will be open to every employer and employee and it is hoped that a large number of these persons will avail themselves of the privilege of attending these meetings.

At the first conference in October 1913, there were registered about two thousand persons. Expressions of approval of such conferences and the benefits to be derived therefrom have been received in large numbers by the Commissioner. It is the intention to make this second conference of equal or even greater value. Considerable attention will be given this year to the study of the safety and welfare standards which are being formulated by the Industrial Board.

The Commissioner of Labor and Industry invites any suggestions which would further the object of making these conferences of value to labor and industry.

DANGER AND SAFETY SIGNS.

The Conference Board on Safety and Sanitation, composed of The National Founders' Association, The National Association of Manufacturers, The National Metal Trades Association and The National Electric Light Association, has recently standarized certain danger and safety signs. These signs are already used in large numbers in workshops throughout the United States and Canada and are proving themselves serviceable in the prevention of accidents. They are printed on cloth in legible white letters on a red or green background. They are furnished at sixty cents per dozen in any assortment by addressing the Secretary, M. W. Alexander, West Lynn, Mass.

The titles and colors are as follows:

DANGER (red)
DANGER—DO NOT TOUCH (red)
OUT OF ORDER—DO NOT TOUCH (red)
SAFETY FIRST (green)
DANGER—HIGH VOLTAGE (red)
RAILROAD—DANGER (red)
FIRE EXIT (red)
NO SMOKING (green)

JOINT COMMITTEES ON SAFETY STANDARDS AND REGULATIONS.

The voluntary committees which have drawn up the specifications for Safety and Welfare Standards are given below.

These committees were gathered together by George S. Comstock and James C. Cronin, members of the Industrial Board, under the

direction of the Commissioner, who appointed the former to act as Chairman.

It is well worth noting that these persons gave their time and services gratuitously and they deserve commendation for this display of public spirit.

COMMITTEE ON FORGING AND STAMPING MACHINERY.

L. E. Hickok, The D. Wilcox Mfg. Company, Mechanicsburg.

Carl B. Auel, Westinghouse Electric and Manufacturing Co., Pittsburgh.

H. E. Derbyshire, Chambersburg Engineering Co., Chambersburg.

W. H. Kaiser, Metric Metal Works, Erie.

Pennsylvania Federation of Labor, Harrisburg, Pa.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

G. S. Atkins, The Scranton Forging Co., Scranton.

George T. Fonda, Bethlehem Steel Co., Bethlehem.

Lew R. Palmer, Chief Inspector, Department of Labor and Industry.

COMMITTEE ON POLISHING AND GRINDING MACHINES.

Louis T. Byers, The Abrasive Material Co., Philadelphia.

Wm. P. Eales, The Travelers Insurance Co., Hartford, Conn.

A. B. Davenport, Jr., Wm. Wharton, Jr. & Co., Philadelphia.

K. E. Herrick, Norton Company, Worcester, Mass.

R. G. Williams, Norton Company, Worcester, Mass.

Pennsylvania Federation of Labor, Harrisburg, Pa.

G. W. Thomson, Norton Company, Worcester, Mass.

Charles G. Smith, Pittsburgh Emery Wheel Co., Pittsburgh.

Charles Black, Inspector, Department of Labor and Industry, Philadelphia.

Jacob Lightner, Supervising Inspector, Department of Labor and Industry, Philadelphia.

COMMITTEE ON COMPRESSED AIR.

George T. Cousins, The Ingersoll-Rand Co., New York, N. Y.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

William P. Eales, Travelers' Insurance Company, Hartford, Conn.

Pennsylvania Federation of Labor, Harrisburg, Pa.

H. B. Griner, Chicago Pneumatic Tool Co., Chicago, Ill.

Lew R. Palmer, Chief Inspector, Department of Labor and Industry, Harrisburg.

COMMITTEE ON FOUNDRIES.

Edgar T. Thomas, Baldwin Locomotive Works, Philadelphia.

Pennsylvania Federation of Labor, Harrisburg, Pa.

William P. Eales, Travelers' Insurance Company, Hartford, Conn.

H. A. Lomax, Mackintosh Hemphill & Co., Pittsburgh.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Lew R. Palmer, Chief Inspector, Department of Labor and Intry, Harrisburg.

COMMITTEE ON STATIONARY STEAM ENGINES.

A. S. Bentz, United Electric Company, Lemoyne.

Pennsylvania Federation of Labor, Harrisburg, Pa.

William P. Eales, Travelers' Insurance Company, Hartford, Conn.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Lew R. Palmer, Chief Inspector, Department of Labor and Indusdustry.

COMMITTEE ON BAKE SHOPS.

Dr. J. C. McNeil, Supt. Bureau Food Inspection, Dept. of Health, Pittsburgh.

Mr. E. T. Gibson, 409 West 15th St., New York City, Representative of National Biscuit Co.

Mr. H. M. Gooderham, Dairy and Food Inspection Division, Penna. Dept. of Agriculture, Patton, Cambria Co.

Mr. David McKibbin, Chief of Division of Meat and Cattle Inspection, Philadelphia. Dept. of Public Health and Charities, Philadelphia.

Mr. Adam Ehresmann, 1107 Shackamaxon Street, Philadelphia, Master Bakers' Association of Philadelphia.

Mr. Christian Bonnet, 1462 Newkirk St., Philadelphia, Master Bakers' Association of Philadelphia.

Mr. Carl Stiefel, 1925 West Somerset St., Philadelphia, Master Bakers' Association of Philadelphia.

Mr. William Sturma, 1701 Woodstock St., Philadelphia, Master Bakers' Association of Philadelphia.

Dr. John C. Price, Dept. of Labor and Industry, Harrisburg.

Mr. Axtell Byles, Titusville.

Mr. Fred Deutler, Deutler Baking Co., Titusville.

Mr. James B. Arthur, Sec. Ward Baking Co., 464 Riverside Drive, New York City.

Mr. Hugh Matchett, Cor. Sec. Local Union No. 12, Bakery and Confectionery Union, Pittsburgh.

Mr. Alex. Markowitz, Sec. Bakers' Union, 614 W. Montgomery Ave., Philadelphia.

Mr. William Friehofer, Freihofer Baking Co., 20th and Indiana Ave., Philadelphia.

Kalb Baking Company, Philadelphia.

Dr. Samuel Dixon, Commissioner, Dept. of Health, Harrisburg.

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JOHN PRICE JACKSON, Commissioner

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PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin Acting Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics; clerks, etc.

Richard M. Pennock is Chief of the Division of Accident Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

DEPT OF LABOR
SEP 23 1915

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SANITATION IN INDUSTRIAL ESTABLISHMENTS.

The subject of sanitation in industrial establishments is one of the matters uppermost in the mind of the public at the present time. Some people seem to think that it is only recently that anything has been accomplished along these lines. It must be remembered however that as early as the year 1802 England passed her first factory act which was designed to protect the health and morals of parish apprentices employed in cotton and woolen mills. In 1810 France, looking towards the protection of adults as well as of children, issued a decree regulating dangerous and unhealthful occupations. These laws have been improved and amended from time to time as factory conditions have changed and as public opinion has become more enlightened. Every other civilized country has followed in the footsteps of these two nations, or has at times preceded them, with laws intended for the betterment of the condition of their industrial population.

The fact that this matter has attracted the universal attention of all legislative bodies shows that there must be some necessity for such protection. Because a certain condition impairs the health slowly and possibly for many months imperceptibly, is all the more reason that it should be eliminated. Imperfect sanitation in whatever form it may appear first affects the worker by lowering his vitality, thus decreasing his energy and impairing his earning capacity. Later he occasionally loses a few days from his work. This is followed in time by longer absences from work to which is usually added the expense of medical attendance. Thus, while his income is steadily decreasing, his living expenses are not even remaining stationary but are constantly increasing. Finally comes total incapacity for earning and entire dependance for support upon relatives or upon society in general, the latter either in the form of private charitable institutions or of those supported by the State. The financial loss to the community in only one such instance is considerable; multiply this loss by thousands and you have the loss to the State; while the suffering of the individual, both mental and physical, is incalculable.

The laws of Pennsylvania referring to dusts, fumes and gases are designed to cover two dangers—those arising from purely mechanical irritation and those arising from the absorption of poisonous materials in any one of these three forms. An example

of non-poisonous dust is that composed of fine particles of metal or abrasive materials which are found in many of our industries as for example in the file or stone cutting trades. This dust can not in itself cause tuberculosis, but by injuring the lining of the respiratory tract it forms an admirable spot for the lodgement of any tubercle bacilli to which the worker may be exposed. To cover this condition the law requires that exhaust systems be installed to carry the dust away from the worker.

Poisonous materials to which the employees of our industrial establishments are exposed may in some cases be also mechanical irritants. It is their poisonous properties which are however most disastrous. The workers are usually exposed to these poisons in one or more of the three forms, considered by the law—as dust, fumes or gases. In the case of gases the poisonous material enters the system directly through the respiratory tract and is carried to all parts of the body by the blood. The breathing of air saturated with the products of combustion as in rooms where gas stoves, without proper flue connections are used, is a danger of this kind. When fumes are generated they may enter the lungs directly and be absorbed there, or they may condense on the person of the workman or on surrounding objects. Unless great care is observed, this material is then carried into the body through the mouth by means of soiled hands or contaminated food, and is absorbed from the digestive system. Zinc fumes as found in any plant where that metal is heated to the volatilizing point are an example of one of the many risks of fumes in industrial establishments. The dust concerning which we hear most, not because it is the only dust, but because it is one that is so very prevalent because of the large number of industries into which it enters, is lead. This substance may enter the system during the process of breathing, but its most common mode of entrance is with food which has been exposed in the work room or which has been polluted by the unwashed or imperfectly washed hands of the worker. These risks under the old law were supposed to be covered by the provision of sufficient devices for the carrying away of poisonous and dusty substances. The last legislature however, in what is known as the Woman's Act, directed that all such places employing women shall maintain lunch rooms for their use. The Lead Poisoning Act also passed by the last legislature requires that the manufacturers of lead products provide not only sufficient devices for removing the dust but that they also provide respirators, overalls and jumpers kept clean at the employer's expense, lunch rooms and properly equipped wash and dressing rooms.

Several laws of the State stipulate specifically that the employer provide suitable drinking water for his employees. The need for these is very apparent when we consider the great number of dis-

eases that may be caused by impure water. Typhoid fever, the most common disease spread in this way is only one of the many germ-diseases produced by a polluted drinking supply, while poisonous material such as lead in solution is none the less dangerous because of the longer time taken for its effects to become apparent.

The necessity for adequate ventilation and sufficient air space for each employee in any occupation is very apparent. The atmosphere of a crowded workroom to which outside air is not freely admitted soon becomes unbearable by reason of the carbon dioxide and other waste products thrown off by the bodies of the workers. Take in addition to this, a room in which gas is being burned for illuminating, heating or industrial purposes, or possibly for all three purposes combined, the carbon monoxide which is bound to escape into the room through faulty combustion and which is in itself a deadly poison combines with the other influences to produce a feeling of lassitude which is anything but conducive to efficient work. Such conditions kept up for any length of time produce an anaemia which can not be overcome so long as the surroundings of the worker are unchanged.

Improved sanitation is further provided for by the Foundry Act and by the Woman's Act. Both of these require suitable wash, dressing and toilet rooms, separate from but accessible to the work rooms. The latter act also requires that seats be provided for women employees. It is in this line in particular that many of the employers throughout the State have more than fulfilled the requirements of the law. In addition to toilet rooms with every modern improvement, establishments employing a large number of women and girls usually have well equipped rest rooms, and, what is more to the point, a reasonable amount of time is allowed for their use during working hours.

It is the consensus of opinion among those who have had the widest experience with the installation and the operation of these advances in industrial sanitation that it is a paying propositon, both for the employer and for the employee. The object of all these reforms is to provide the most advantageous surroundings possible for the operatives. Anyone working under favorable conditions of temperature, ventilation and hygiene cannot help but be more efficient than another person working under opposite conditions. Increased efficiency means increase of output for the employer. This increased output in a short time, more than covers the cost of installation and operation of the improvements.

By the betterment of their surroundings, not only is the worker's efficiency increased, which to him may be a small matter, but his health is so improved that sickness with its attendant loss of income and increase of expense is lessened in a marked degree.

THE ABUSE AND MISUSE OF SANITARY APPLIANCES.

In many instances, during inspections of sanitary equipment of factories throughout the State, the attention of the Department has been directed to much abuse of such installations. Frequently, employers have stated that after toilets and other kinds of sanitary devices have been installed, the employees have not taken any care of the same and have very often destroyed the fixtures or carried them away. Generally, an investigation of such a condition will disclose the fact that one of two things has occurred: either after these devices have been installed, no subsequent effort has been made to keep them in good condition or they have been abused by malicious persons.

It is generally recognized that any sanitary appliance, if not given frequent overhauling and daily cleaning by some person designated for that purpose, will in time become utterly unfit for use and tend to make the users of the same careless and negligent. The Department feels that if appliances of this kind are of value and service to employees, as has been amply proven during the course of many investigations, they should be given proper attention after they have been installed, in order that they may be kept in a sanitary and pleasing condition.

On the other hand, in a majority of instances, it has been found that a few of the employees have abused these sanitary appliances through ignorance or maliciousness. Owing to the fact that the other employees have not felt the injury which is being done to them, they have given no attention to the matter and have allowed these few malicious persons to destroy something which had been installed for the benefit and comfort of all. It is suggested that where this condition prevails the management of these establishments call the employees together and point out to them the fact that these few ill-disposed persons are not only destroying valuable property but are causing discomfort and danger to the whole body of workmen from insanitary conditions. Also, by talks and pamphlets on sanitary subjects the value of these appliances should be pointed out and it will be only a short time until an esprit de corps is established among these people so that they will not only be ever thoughtful of their own individual actions but also will not permit a few thoughtless or malicious employees to destroy or make unfit for use those fixtures which have been installed for every person's protection.

SPITTING.

The prevalence of promiscuous spitting, in establishments throughout this Commonwealth, is a much too common condition. In practically every factory one would find upon close examination that some people have been expectorating on the stairways, in shaftways, corners of rooms and recesses instead of using the proper receptacles.

Apparently no thought has been given to the dangers to which all employees are exposed in establishments where such practices prevail. The heedless, thoughtless and careless are allowed by their fellow employees to continue this insanitary habit because they either give no consideration to the dangers arising therefrom, or else they are ignorant of them.

The Department feels that this matter should receive serious consideration by employers and employees and to accomplish that end have been doing all in their power to present the grave dangers to all who may be affected. It is further suggested that proper receptacles for this use be provided and kept clean and that the subject receive consideration at conferences between employer and employees.

Some of the diseases which may be spread through this practice are well worth mentioning, namely, tuberculosis, diphtheria, tonsilitis, whooping cough, influenza and pneumonia. One tubercular person working in a factory and expectorating promiscuously throughout a work-room may eventually cause this disease among many of the remaining workmen in that particular room. If this thought is once brought home to the workers, experience has shown that they will not only take upon themselves the duty of refraining from such practice but will do all in their power to prevent their fellow employees from continuing this pernicious custom. The whole secret of solving this problem seems to depend entirely upon having each separate body of employees act as a unit in preventing this filthy and most insanitary habit.

CO-OPERATIVE METHODS.*

THOMAS DARLINGTON, M. D.
Secretary Welfare Commission, American Iron and Steel Institute.

Although my subject is "Co-operative Methods," I am taking the liberty of giving you a general view of welfare work, and you will be able to judge where the co-operation comes in.

First, a few words upon hygiene and welfare work generally, after which I shall talk specifically upon several lines of welfare work.

What I have to say is largely contained in two addresses now published, that were made before the American Iron and Steel Institute, so this is partly a repetition of what I have said on former occasions.

Wonderful has been the progress of the last one hundred years. Let your mind go back for a moment to one hundred years ago and compare the things we know they had then with what we have to-day; our means of communication, the diffusion of knowledge in books and newspapers, great discoveries in chemistry and inventions in machinery upon which depend our manufacturers of to-day, and the more recent wonders of electricity, our lighting system, telephone, telegraph, moving pictures and all the other advances that we enjoy to-day.

Coincident with the world's progress, much has been done in the last thirty-five years for the relief from those conditions of environment that affect us unfavorably, for prevention of disease and physical suffering, for the promotion of longevity and happier conditions. Even prior to this, a great deal had been done. Epidemics of disease had come to this country. The Irish immigrant brought typhus fever, a disease that we now rarely hear of. Smallpox is now comparatively rare, and yet at one time it carried away a large part of an empire. Several times did Asiatic cholera come to this country, and in 1849 crossed it; but to-day such a thing as Asiatic cholera is unknown here.

More recently we have had wonderful advance in surgery, due to the discovery of the microbic cause of infection. Where thirty-five years ago it was thought impossible to operate safely, such operations are now done every day. The deaths from typhoid fever have been reduced by more than 50 per cent. The Panama Canal could never have been dug, were it not for the advance in sanitary science; and the success of Japan over Russia was partly due to hygiene. The fall in the death rate from diphtheria after fifteen

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

years following the free administration of antitoxin, was 74 per cent. Even during the period of time I have been practicing medicine, the death rate of the City of New York has been cut in half. Had that death rate prevalent when I commenced the practice of medicine continued, we would have had 150,000 deaths annually instead of 75,000 deaths, and many more cases of illness.

It is beginning to be understood, and soon will be generally realized, that much effort has been wasted in the past and much efficiency has been lost by lack of attention to industrial hygiene. Matters of this kind have been regarded as philanthropic, and therefore not to be considered in connection with business enterprise. As the business transactions of the world have for their object profit, any proposal is measured by finance.

A workingman's capital is largely his health. It is his greatest asset. Upon his health depends his efficiency. It is therefore of great importance that the prevention of accidents and the prevention of sickness should be given careful consideration, and that everything practicable be done not only to prevent disease but also to raise the standard of health to the highest point. The responsibility for the health of a community may be considered under three heads:

1. Personal hygiene or care by employees of themselves.
2. Care by a company within its inclosure.
3. Care by authorities (town, city, State and National Government) in the making and the enforcing of laws.

Among the things which are largely under the employee's control and which he should look after himself are: The regulation of his meals, the amount, character and mastication of them; the amount and character of drink; hours of rest and sleep; ventilation of rooms; personal cleanliness, for clean bodies and clean clothes lessen the chances of blood poisoning in accident cases; washing of hands before meals; daily washing of feet; proper fitting of shoes; amount and kind of clothing; care of the eye, ear and nose; brushing of teeth.

Did you ever stop to think of this matter of washing the hands? In the beginning of modern surgery, sprays were placed around the room to prevent the dust and the atmosphere from getting into the wound. But soon these sprays were eliminated and the same success attended operations. After years of operations surgeons have come to the conclusion that the principal cause of infection in operations is the hands, personal contact, so that now the surgeons wear rubber gloves to prevent their hands from coming into contact with the wound.

Few people realize the part that an unclean mouth or unclean teeth bear upon efficiency. When the crusade against spitting began, men

who were arrested always used the argument that they did not have consumption so what was the harm of spitting. When the Pneumonia Commission, after its appointment in New York, in 1895, began its labors, the first investigation was made relative to the prevalence of the germ and an examination was made of many mouths to find if the germs of pneumonia were in them. These investigations showed that 70 per cent. of those who were examined had germs of pneumonia in their mouths. It has been found that the mouth contains many other kinds of bacteria. These bacteria swallowed with the food, unless there is sufficient gastric juice to kill the germs, produce a fermentation which splits up the food products that should be absorbed with but little change. In this way we lose much energy. What is the use of cooking our food, and being very careful with milk, for instance, to kill every germ by pasteurization, and then to pass it through an unclean mouth and contaminate it with bacteria from the mouth? I trust the time will come when every workman will not only have the opportunity, but will also be shown the good, of brushing his teeth, so that he will do so before every meal.

The employee can and should cultivate regularity of habits and cheerfulness of disposition, knowing that the mind has much to do with the body and especially with tissue changes and secretions. Observation shows this. Many years ago a very astute physician who lived at the north of Lake Champlain, had a patient who was shot in the abdomen, the shot carrying away a portion of the stomach and leaving the stomach so that the doctor could look in and see the digestion of food. Whenever the patient was made angry, or his mind was not in a cheerful condition, the secretion of gastric juce was seen to stop. So it is essential that we should cultivate cheerfulness.

The first condition of health is fruitful toil. I am not speaking now for the maintenance of long hours of labor. As a physician I have made as many as twenty calls in a day and know what it is to be called out during the night in maternity cases. I know what long hours mean, and I am not advocating them. I believe, however, that the first condition of longevity is work. But to have this effect, work must produce happiness; it must produce cheerfulness; it must be a pleasure to work.

Among the things that employing companies should consider, are, drinking water supplies, washing facilities, laundries, lockers, toilet arrangements, drainage and sewage disposal, disposition of garbage and rubbish, care of stables and animals, heating in winter, cooling in summer, ventilation, prevention of overcrowding, elimination of dust, gases and fumes, providing clean mills and yards, lighting, first aid, hospitals, trained nurses and social workers, physical examination of employees, lunch buckets and lunch rooms, commissaries

(bread, meat and milk supplies), flies, mosquitoes, vermin, housing, gardens, rest and recreation (Sunday rest, club houses).

The head of a great corporation must justify expenditures for such purposes to the stockholders. These suggestions are not haphazard but have been carefully worked out to definite conclusion. Results can be put in dollars and cents. This work pays. It is easy to understand this if one understands something of physiology.

Thus, water is a natural constituent of the body and is to be considered as food, though not in the sense that it liberates energy. It affects secretion and excretion and the activity of the various organs. It aids in absorption of food and caries away waste. It diminishes fatigue. It regulates body temperature and acts as a distributer of heat, equalizing temperature. The temperature of the water may cause disease. From water polluted with bacteria, such diseases as typhoid fever, dysentery and diarrhoea arise. Water may be polluted with metals and may produce lead poisoning. Drinking cups used in common may cause disease. Drinking a sufficient amount of water lessens alcoholism.

Again, fatigue is of great importance, as bearing upon efficiency. How do people become fatigued? What is it that causes fatigue and how can it be avoided? These are questions of importance and the physiology connected therewith should be thoroughly understood.

By a mental exertion, by will power, we make a muscle contract. Thus we may lift the arm through muscular contraction. This causes an expenditure of energy. Every muscle contains in itself latent energy in the form of fuel to be converted into mechanical energy and heat. This fuel is supplied from the blood and consists of sugar, animal starch and fat.

The living substance of muscle has the power of burning up sugar. In this process lactic acid and ultimately carbon dioxide and water are formed. Thus dextrose changes to lactic acid—and the lactic acid is finally broken down into carbon dioxide and water.

To develop energy in the body, there must be fuel. This comes from our food. There must be a supply of oxygen. This we take in when we breathe. There are also certain ashes of waste which must be excreted from the body.

The oxygen necessary for combustion—that is, for chemical transformation in the production of energy—is carried by the red material in the blood (haemoglobin) to the tissues. This red material there gives off some of its oxygen, and the blood takes up carbon dioxide, which it carries back to the lungs to be eliminated.

From the above it is obvious that muscular energy depends largely upon the ability of the system to produce, store and utilize fuel; to

take up oxygen from the air and transport it to the tissues in order to burn the fuel; to carry off the wastes and other toxic substances.

Conversely, fatigue is due primarily to the failure of the system to perform properly one or more of these functions.

First, fatigue may be caused by anything that interferes with the storage of fuel. This may arise from a lack of fuel. Under this head would come underfeeding, improper feeding, indigestion and lack of assimilation.

It requires no argument to prove that if fuel is lacking energy must also be lacking. So if one does not have sufficient food, he cannot store enough energy. This may also be the case when a large enough quantity is eaten but not of the proper kind or quality. Food may be spoiled in the lunch basket, having undergone fermentation, or it may undergo fermentation in the stomach due to lack of gastric juice caused by some disturbed mental condition, or to the presence of bacteria derived from the teeth or from dirty hands. Particularly, for the proper digestion of food, we must have pleasant surroundings.

To combat fatigue from these causes it would be well to have at plants, dining rooms and restaurants with freshly and properly prepared and well selected foods, furnished at the lowest practicable price, served under cheerful and pleasant surroundings, and with sufficient time to eat.

Secondly, fatigue is caused by anything that interferes with the carrying of oxygen to the tissues. This may be due to diminished oxygen in the air; especially to bad ventilation, or to sleeping in overcrowded rooms. Or it may be due to a diminished number of red corpuscles in the blood and therefore diminished oxygen carrying power. So anything that causes anemia bears upon fatigue.

The third great cause of fatigue is poisoning by accumulated waste in the muscles or poisoning by toxic substances. This accumulation may be due to too rapid formation of the products of waste or, it may be due to the inability of the blood or system to carry away the waste products. If the nerve of a muscle is constantly stimulated the muscular contractions become smaller in extent and finally cease. The muscle is then said to be fatigued. The sugars and glycogen have been burned, producing energy and leaving as wastes carbon dioxide and lactic acid. Unless eliminated these materials act as poisons. To get rid of fatigue from this cause, people should drink sufficient water to dilute the poisons and carry them away through the kidneys. Shower baths are especially useful in ridding the body of poisons generated in this way. Shower baths are especially good at the end of the day to produce recuperation. Fatigue is found to be produced also by other poisons which are generated in the intestinal canal. These are the products of putrefaction caused by bacteria.

In conclusion let me urge not only the value of welfare work such as I have described as a matter of economy but also in the removal of just causes of discontent. We are making the conditions happier. In the iron, steel and allied industries every recommendation that I have here made is being put into practice.

THE ATTITUDE OF THE INSURANCE COMPANY TOWARD ACCIDENT PREVENTION AND HEALTH.*

J. C. BARDEN.

Associate Director, Bureau of Inspection and Accident Prevention, Aetna Life Insurance Company.

The insurance companies have come in for such a full share of the criticism which for some time has been directed against corporations of all kinds, in many instances apparently simply because they are corporations, that this opportunity for us to tell a discriminating audience a little about an important phase of insurance activity could not have come at a more opportune time.

Discussion of "The Attitude of the Insurance Company Toward Accident Prevention and Health" is the more timely, too, because recent developments in legislation have brought accident prevention and the conservation of health into greater prominence than would have seemed possible a few years ago. With the placing of workmen's compensation laws upon the statute books of state after state, and a trend of sentiment in favor of ultimately bringing disability caused by sickness within the same category, the public is fast awakening to a realization of the fact that many of the accidents and much of the disease which have heretofore been considered unfortunately to be inseparable from our industrial life, can and should be prevented.

I use the word *should* advisedly and emphatically, and I am glad that I can do so. We in America have been too long oblivious to the baneful results of ignoring the drain upon the nation caused by preventable accidents and sickness.

As the entire subject assigned to us is too large to be discussed intelligently within an amount of time suitable to such an occasion, I shall confine myself, with your permission, to the accident portion.

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

The magnitude of industrial accidents has only recently begun to be appreciated to any considerable extent. We are all familiar with the oft quoted figures of our industrial accidents—35,000 killed and 2,000,000 injured each year, but I doubt if many of us realize what these figures mean.

Every hour 232 workmen killed or injured.
Every fifteen minutes a workman killed.
Every sixteen seconds a workman injured.

And this for every day of the month.

If we reckon the basis of three hundred days of eight hours each the figures mean a workman killed every four minutes and a workman injured every four seconds.

Even this startling showing is incomplete. It is a conservative estimate, based on the best available statistics, of our greatest experts on industrial mortality; but, impressive as it is, it refers only to adult male workmen, taking no account of the millions of working women nor of the many minors employed in our industries.

With these included, and with our statistics as exact as they should be, it is fair to assume that the annual deaths from industrial accidents would be shown to be nearer 50,000 than 35,000 and that the injuries would be proportionately more numerous.

An insurance company is perhaps in a little better position than anyone else to appreciate what our industrial accidents really are and the importance of reducing them as much as possible. Not only are the insurance companies in this position, but they are acting upon the knowledge which has come to them in the course of their work.

I am, of course, most familiar with the work done by the company which I have the honor to represent, and I hope you will pardon me if my talk is largely descriptive of the work done by our Bureau of Inspection and Accident Prevention. This description can be taken as a fair example of the work being done by the other casualty companies, with of course considerable variation in methods adopted.

When our company entered the liability insurance field in 1902, Mr. J. Scofield Rowe, who organized the department and who, as Vice President of the company, is still at its head, gave his attention to the creation of an inspection bureau, which would prosecute vigorously in every possible way a carefully planned effort to cut down the tremendous national waste due to industrial accidents. It was, and is his belief that this is one of the most important functions of a liability insurance company and one of the most valuable features of the service which it should give in addition to protecting its assured against actual money loss on account of work accidents.

This belief was based on two general grounds: one, that it is both the duty of the employer to prevent accidents to those in his employ, and also to his economic advantage, in view of the fact that accidents as well as being directly costly, retard production; and the other, that it is both the privilege and the duty of such an institution, as an insurance company, to take an active part in the conservation of human life and limb in industry.

Not only was the creation of an inspection bureau one of the first steps taken in the organization of our Liability Department, but every effort was made from the beginning to impress upon the insuring public the importance of accident prevention. Agents were urged to give the widest publicity to the work of this Bureau and what it meant to the insured, not only in lessening the privation and suffering consequent upon accident but also in making it possible for him to obtain insurance at a lower cost. Both agents and inspectors were encouraged in a systematic effort to further the cause of accident prevention by pointing out to employers its economic as well as its humanitarian side.

This combined work of education and practical assistance which was inaugurated at the time we entered the liability insurance field, has been carried on ever since, with unfaltering zeal and with a steadily increasing range of activity. Briefly summarized, these activities include:

1. The employment of a large force of expert inspectors who devote their entire time to visiting the plants and operations of our insured, pointing out dangerous conditions and recommending safeguards for them, and urging safer methods for doing work for which no safeguards can be employed.

2. Gathering together the experience of the entire world in accident prevention methods, selecting from it what seems practical here, and placing this, through inspectors and in other ways, at the disposal not only of our own clients, but of all others who may be interested.

3. Endeavoring to stimulate interest in accident prevention by carefully prepared exhibits, by illustrated lectures and by publications of various kinds.

4. Co-operating in every possible way with other agencies for promoting accident prevention.

As before stated, we have always considered that the inspections furnished by an insurance company were one of the most important features of the service rendered to the assured.

The ordinary employer is generally not only willing, but anxious to do everything reasonable to prevent accidents in his plant, but often because of his long familiarity with existing conditions, or

because of ignorance of how accidents happen, places of danger are overlooked until indicated by the trained inspector. For the purpose of pointing out such menaces and showing the assured how to eliminate the danger, we employ a large number of practical mechanics who have been selected for their general knowledge, or for their training and experience in some special line. These men have also been specially trained in safety work and they are constantly being supplied with information regarding new methods which have come to our attention in one way or another.

Each inspector is provided with a loose leaf note book containing a set of standard specifications for safeguarding; also cuts of any new or unique safeguards which come to the attention of any of the inspectors of the company. These standards and cuts are added to from time to time as new material is accumulated. Bulletins are also issued regarding accidents and how to prevent them.

Liability inspections may be classified, broadly speaking, as follows: factory, elevator, contractor, mine, mercantile, and theatre.

Men engaged for factory inspectors are always selected for their practical experience, training in a general machine shop or as a millwright or stationary engineer, being especially desirable qualifications.

The large range covered by these inspectors when inspecting a factory risk can be appreciated when you are told that our factory inspection blank covers twelve pages and asks more than two hundred questions in regard to the plant and its equipment. Besides this, every machine in the plant must be listed and it must be shown whether any dangerous part of any machine is unguarded. A sheet on the special hazards in the plant must be filled out in detail.

Recommendations are made for safeguarding all dangerous points. These recommendations are carefully gone over with the assured and methods of building safeguards are explained by the inspector with the help of drawings and photographs.

A complete copy of these recommendations is forwarded to the assured from the office of the company. If there is any doubt about any of the recommendations, a second or, if necessary, a third visit is made by the inspector for the purpose of explaining more clearly any doubtful points.

Elevator and other inspections are made by specially trained men. In case of large contracting or building risks, a special man is often assigned to devote his whole time to that one risk until the contract is completed. This man watches every detail of construction and points out dangerous places or methods of operation and suggests safer means or methods.

All risks are inspected once every three to twelve months except elevators, which in some cases are inspected as often as once a month.

The above outline of our inspection work, short and incomplete as it necessarily is, gives some idea of the careful and thorough manner in which liability inspections are made.

Our Bureau of Inspection and Accident Prevention is now making inspections at the approximate rate of 3,750 inspections a month, or 45,000 a year.

While the average inspection report calls for many recommendations, the average number of recommendations on all classes of inspections made, including elevators and stores, exceed two recommendations per inspection, which means that the department is now making an average of approximately 100,000 recommendations a year. These recommendations are divided into two classes; those deemed "Essential" amounting to 25 per cent of all recommendations and the remaining 75 per cent known as "Desirable." Of these recommendations, approximately 100 per cent of the "Essential" and 75 per cent of the "Desirable" are complied with.

The elimination of this large number of danger points, directly prevents many accidents and causes many other accidents to be less severe; but the work of the inspector does not stop here. He tries in every way to stimulate the interest of the employer and the foreman in inaugurating safety campaigns among their employees, as all safety men fully appreciate that unless the employee himself is interested in safety, the installing of mechanical safeguards will be of comparatively little value.

PUBLICATIONS.

One of the most valuable features of our accident prevention work has been the publication from time to time of books and pamphlets dealing with the subject generally, or with special branches of it. These publications have been widely circulated, not only among our own assured, but also among manufacturers and employers generally. It has been our practice to give these publications to any one desiring to have them who appeared to have legitimate use for them, and the demand has been such that some of them have run into several editions.

Among the most popular of them have been "Safeguards for the Prevention of Industrial Accidents," "Woodworking Safeguards," "Elevators, their Care and Operation," "Cotton Mill Safeguards," "Causes and Prevention of Accidents in Lead and Zinc Mining," and "Emergency Medical and Surgical Aid."

That you may have some idea of the ground covered by these books, let me briefly describe two of them.

"Safeguarding for the Prevention of Industrial Accidents" is a book of 174 pages and 168 illustrations. Inasmuch as it was designed to treat the whole subject of accident prevention in a general way,

it is necessarily incomplete in many respects. The suggestions contained in it are general in nature, and many of them are applicable to a large number of industries.

As has already been said, a book so general in nature must necessarily be incomplete in many respects, especially as regards the specific hazards of different industries. For that reason it was deemed advisable to treat certain different industries, or groups of industries, more or less alike in their accident prevention problems, in separate books which could take up these specific hazards in more detail.

"Woodworking Safeguards" is the first of these books. It contains 217 pages and 320 illustrations. While it makes no pretention to being the last word on the subject, for of course that will never be said, it is an earnest effort to offer practical suggestions for safeguarding workmen in all the wide range of lumbering and woodworking industries.

The above publications have been mentioned specifically merely to give some idea of this phase of our accident prevention work. In addition to this, it has given wide circulation to many other pamphlets and bulletins, and it has made the reproduction of the several state laws, bearing upon the protection of workmen, a prominent feature. Other insurance companies are continually getting out pamphlets and bulletins along similar lines.

EXHIBITS.

We have, in pursuing the educational side of accident prevention work, prepared and shown a number of exhibits designed to arouse interest in these subjects. These exhibits have included photographs of safety devices, guarded and unguarded machinery, safe and unsafe ways of doing work, how accidents happen, the results of accidents, broken parts which have caused accidents and various accident prevention publications issued by the Company. The several features of the exhibits have been carefully classified, so that persons interested in any special phase of the subject, could easily find what they wanted and thoroughly informed inspectors have always been on hand to explain the details of any device or any preventative measures exhibited. Such exhibits have been shown in various parts of the country at exhibitions, conventions, conferences, gatherings of employers or employees, and have always attracted much attention and have presumably done considerable good.

LECTURES.

Another efficient educational method has been the giving of illustrated lectures by one or another member of our accident prevention staff. Such lectures have endeavored not only to emphasize the im-

portance of accident prevention from both the humanitarian and economic side, but also to offer practical suggestions for coping with its many and varied problems. Attention has been given to the importance of organization in safety work and to the imperative need for cordial co-operation on the part of both employees and employers, as well as to the possibilities of material and mechanical safeguarding. The arguments advanced have been made more forcible, and the information given, more convincing, by the free use of colored lantern slides.

CO-OPERATION WITH OTHER AGENCIES.

We have taken pleasure in co-operating in every possible way with other agencies engaged in promoting the cause of accident prevention. We have done this as opportunity offered by exchanging information, by freely circulating our publications, by supplying lectures, by contributing to the columns of various publications taking an interest in the movement, by exhibiting, as already described, and in many other ways. We have also taken a part in the work of the National Council for Industrial Safety, which was launched into actual existence at the Second Safety Conference held in New York last September. This Council is designed to promote industrial safety in every practical way, among others through the establishment of a central clearing house of information, through the organization of local councils, where "Safety Men" can get together frequently to discuss their problems, and to standardize safety devices and practices in the several lines of industries.

Much interest is being manifested throughout the country at the present time by both the employers and the liability companies in what is called "Merit Rating" of liability risks.

For years the fire insurance companies have rated fire risks on a schedule, starting with a base rate for the class of business and adding charges for all conditions which were below a set standard and giving credits for certain features above such standards.

The liability insurance companies, however, have rated all liability risks by classification, all risks falling in a given class, taking the same rate without regard to the condition in a given plant.

That this method was unfair to the employer, who had spent considerable money to safeguard his plant, by giving his factory the same rate as another factory doing the same class of work, but in which no improvements had been made, and in which everything was in a neglected and carelessly kept condition, was acknowledged by practically everyone who gave any thought to the question. Moreover, under the liability laws, the verdicts rendered by different juries were so varied for practically the same injuries, that any scientific method of rating would be most difficult to apply.

With the introduction of compensation laws which compel the employer to pay a certain fixed amount for each injury, it becomes entirely feasible to establish a schedule of debits and credits for variations from definite standards, which would give an equitable rate based on the merits of each risk.

The problem of working out such a schedule was, however, such a large one, and involved such radical changes in long established methods that underwriters generally were reluctant to undertake the task. In the early part of 1911, the Aetna, however, decided to blaze the trail and adopt a merit rating plan. After several months of work, a new inspection report was prepared and a tentative schedule was adopted. The first schedule was for use in rating furniture factories, and after the first draft was completed, two inspectors were sent to Grand Rapids, Michigan, and the schedule was tried out in about thirty furniture factories. After this trial, the schedule was revised and again tried out. Schedules were then prepared for other classes in a similar manner and these schedules have since been used by the company in determining rates.

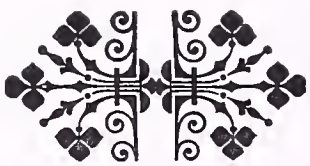
Within the last few months, the Workmen's Compensation and Service Bureau has approved the merit rating system, and a Merit Rating Department has been installed as a branch of the Bureau with Mr. Carl M. Hansen, a trained safety engineer as secretary.

This department will promulgate methods, standards and schedules for rating and will employ a corps of inspectors who will carefully inspect each factory and the rate on any given factory will be governed by the conditions found in that individual risk.

This method of rating cannot fail to be appreciated by the employer who is interested in accident prevention. It will also doubtless be the means of inspiring much safeguarding, for some employers will see more clearly the advantage of providing proper safeguards, if by doing so their insurance rate is reduced.

Notwithstanding that insurance companies have done so much which seems practical, to further the cause of accident prevention, and feel that their efforts have met with a fair degree of success, we are convinced that what has been accomplished in the past is relatively nothing when compared with what may be done in the future. The advent of Workmen's Compensation Laws, providing that payment shall be made for all accidents which may occur regardless of whether or not they are due to anyone's fault, has given a great stimulus to accident prevention work. Employers and employees are rapidly becoming more and more awake to the importance of the matter, and both are calling for all the aid obtainable to assist them in cutting accidents down to the smallest possible number. And we consider it a privilege, as well as a duty to do our

part in furnishing this aid, and with that object in view are constantly endeavoring to increase the efficiency of every branch of accident prevention work and to give wider range to this work and to seek new means of making accident prevention departments of increasing service.



SAFETY AND WELFARE STANDARDS

SUBMITTED TO

THE INDUSTRIAL BOARD

OF THE

DEPARTMENT OF LABOR AND INDUSTRY

OF THE

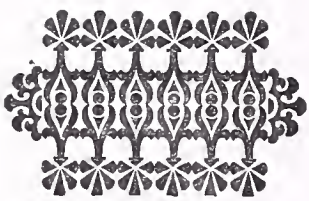
COMMONWEALTH OF PENNSYLVANIA

ON THE FOLLOWING SUBJECTS:

BOLTS, NUTS AND RIVETS

NOTE: The following specifications are based upon reports on these several subjects, submitted to the Industrial Board of the Department of Labor and Industry, by joint committees composed of members of the Board and representatives actively interested in the subjects.

The thanks of the Board are due to the gentlemen who co-operated with its Committees.



BOLTS, NUTS AND RIVETS.

The following persons and organizations were invited to become members of this Committee:

Pennsylvania State Federation of Labor, Harrisburg, Pa.
American Iron & Steel Mfg. Co., Lebanon, Pa.
Milton Mfg. Co., Milton, Pa.
Hoopes & Townsend, Philadelphia, Pa.
Garland Nut & Rivet Co., West Pittsburgh, Pa.
General Accident F. & L. Ins. Co., New York City.
National Machinery Company, Tiffin, Ohio.
Lebanon Iron & Steel Mfg. Co., Lebanon, Pa.
Mr. L. R. Palmer, Chief Inspector, Dept. of Labor & Iudustry, Harrisburg, Pa.
Mr. R. M. Pennock, Dept. of Labor and Industry, Harrisburg, Pa.
Mr. J. S. Spicer, Dept. of Labor and Industry, Harrisburg, Pa.

On July 14th, 1914, the following persons were present and unanimously agreed to these recommendations to the Industrial Board:

Mr. Albert C. Baker, General Fire and Accident Ins. Co.,
Mr. Wm. P. Eales, Travelers' Insurance Co.,
Mr. Elmer B. Tolsted, Independence Inspection Bureau,
Mr. Chas. D. Sigsbee, Jr., American Iron & Steel Co.,
Mr. Walter Sweet, General Fire & Accident Insurance Co.,
Mr. William Rhodes, Baldwin Locomotive Works,
Mr. Clement R. Hoopes, Hoopes & Townsend Co.,
Mrs. Edith W. Pierce, City of Philadelphia.

RECOMMENDATIONS.

All bar and alligator shears, heading, forging, punching, pressing, burring, trimming, pointing, facing, champering, tapping, cutting and nutting machines, etc., shall have all gears, sprockets, chains, bands, belts, pulleys, clutches, wheels, shafting, spindles, couplings, counterweights, revolving and reciprocating parts and all other hazardous points, parts or projectives guarded as specified by this Department.

(See feed gears, belts, shafts, etc.)
(See drop forging.)

Pickling vats shall have sides not less than two feet above floor line.

All material shall be safely piled.

Finished products in kegs or packages shall be piled safely; suitable blocks, chalks and strips should be provided.

Pyramid piling of kegs shall be prohibited.

It is recommended that shop trucks should have bearing outside of wheels. Two-wheel barrows are strongly recommended.

MINUTES OF MEETING OF INDUSTRIAL BOARD.

Philadelphia, Pa., June 5, 1914.

The following persons were present:

Mrs. Samuel Semple, Titusville, member of Industrial Board.
Major John P. Wood, Philadelphia, member Industrial Board.
Mr. James C. Cronin, Philadelphia, member of Industrial Board.
Mr. George S. Comstock, Mechanicsburg, member of Industrial Board.
Commissioner John Price Jackson, Harrisburg, member of Industrial Board.
Miss Elizabeth Amend, Derry, Westmoreland Co., Pa., Telegrapher.
Miss E. E. Luther, Derry, Westmoreland Co., Pa., Telegrapher.
Harry J. Shoemaker, Secretary of the Penna. Manufacturers' Association.
Charles J. Eisenlohr, Otto Eisenlohr & Bros., Philadelphia.
Charles N. Cressman, Allen R. Cressman & Sons, Philadelphia.
Samuel Bayuk, Bayuk Brothers, Philadelphia.
Miss Cleo Murtland, National Society of Industrial Relations.
Miss Mildred Lane, Consumers' League, Philadelphia.
Richard W. Williamson, Attorney for Dept. of Labor and Industry.
Jacob Lightner, Supervising Inspector, Dept. of Labor & Industry.
J. L. Krauss, Antonio Roig & Lansdorf, Philadelphia.
A. A. Gumpert, Gumpert Brothers, Philadelphia.
Ellis P. Russell, Gumpert Brothers, Philadelphia.
James H. Maurer, President Penna. Federation of Labor.
Israel Levitsky, Secretary Cigar Makers' Union and representative of Pennsylvania Federation of Labor, Philadelphia.
Roy Morrison, Cigar Makers' Union and representative of Penna. Federation of Labor, Philadelphia.
Carl Hookstadt, United States Industrial Relations Commission.

The meeting was called to order at 11.30 A. M. with Commissioner Jackson in the chair.

A resolution adopted by the convention of the Pennsylvania Federation of Labor was presented for the consideration of those present. (See copy appended).

Part of this resolution read as follows:

> *"Resolved,* That this convention go on record as being opposed to female employees being permitted to work in cigar and tobacco factories under the age of eighteen years."

Commissioner Jackson quoted statistics prepared by the Department of Labor and Industry as follows:

NUMBER OF EMPLOYEES IN PENNSYLVANIA CIGAR FACTORIES.

Americans,	21,878
Foreigners,	8,707
Negroes,	531
Males,	11,985
Females,	18,158
Males under 16,	205
Females under 16,	778

Mr. Charles J. Eisenlohr said he did not know of the existence of a law which prohibited the employment of females between the ages of sixteen and eighteen in cigar factories. The Commissioner stated that he thought that this was possibly a misapprehension on the part of the Pennsylvania Federation of Labor. He further stated that the Industrial Board had no power to make laws, but had the right to promulgate rules and regulations with reference to the enforcement of specific laws.

Mr. Eisenlohr stated that it had never been brought to his attention that the employment of minors in tobacco factories was injurious to their health. He asserted that he could bring before the Board records and opinions from authorities that it is not injurious for a minor to work in a tobacco factory.

The Commissioner: You are prepared to furnish evidence?

Mr. Eisenlohr: Yes.

Mr. James H. Maurer, President of the Pennsylvania Federation of Labor, said he was not a cigarmaker by trade and, therefore, did not know very much about the matter in hand. He stated that Mr. Israel Levitsky was in a better position to talk on the subject.

Mr. Israel Levitsky, cigarmaker, said he considered the employment of children in cigar and tobacco factories injurious to their health. It was his opinion that this statement would be supported by scientists and the medical fraternity. Mr. Levitsky further stated that he had started to work in a tobacco factory at the age of sixteen. On his first day there, he said, he felt intoxicated and it was his opinion that the girls in a tobacco factory were more apt to be misled than the females in other lines of activity. Mr. Levitsky quoted statistics as follows:

> "541 out of every 100,000 marble and stone cutters die of tuberculosis.
>
> "477 out of every 100,000 cigarmakers die of tuberculosis." (See paper—File No. VIII.)

He stated that the above average was taken among Union Cigarmakers where the factory conditions were very superior to those of

the non-union shops. Mr. Levitsky thought that the greatest thing society could do would be to keep children out of the tobacco industry.

Major Wood: What age? A. At least until 18.

Q. You quoted from statistics. From what do you quote these statistics. A. This is taken from a quotation by the President of the International Union.

Q. Does he state from what source he has derived his figures? A. This is only an editorial which I have brought here for my purpose. I can supply Mr. Jackson with that information any time he wishes it.

In response to a query from Major Wood, Mr. Levitsky stated that his nervous system had been ruined by his work in tobacco factories. He said he had started to work at the age of sixteen and had continued until a year ago.

Major Wood: You had no other occupation? A. I had no other occupation. As a matter of fact, I had to stop for awhile about six years ago. I was out of the trade about a year and then I had to go back to it. I am out of it again for a short time.

Mr. Comstock: Do you consider the industry itself a danger to the health? A. Very dangerous.

Q. It is not so much a question in your mind now as to the age as it is to the inherent danger of the occupation? A. In my mind I think that a person must be fairly well grown in order to withstand the effects of the industry.

Q. You say that the industry itself, irrespective of the age, is dangerous? A. In the main I say that a person must be fairly well grown. For a child, it is dangerous.

Q. When you speak of a child, you mean up to the age of eighteen? A. Yes, sir.

Q. Is the industry sufficiently dangerous, in your mind, to be either discontinued or very materially lessened? A. I am not at all prepared to say whether it should cease. That I am not prepared to say, but I can say that it is a dangerous industry for children.

Q. Your idea then is to reduce the danger as much as possible? A. Yes, sir.

Q. You would not say, for instance, as I understand it, that it is perfectly safe for people over eighteen? A. No. I will not.

Q. (By Mr. Cronin). You told us, Mr. Levitsky, that the first day you were employed in a cigar factory you felt as though you had drunk intoxicating liquors. I take it that you meant you were affected by the fumes of tobacco? A. Yes.

Q. Did the same condition exist the second day you were in the factory? A. It existed for quite awhile.

Q. What I want to get at is how long it took you to get accustomed to the smell of tobacco in that cigar factory? A. I cannot tell ex-

actly how long. It takes a long time and I hardly think you ever become accustomed to the fumes. I went into a cigar factory two years ago to apply for a position. Every step I went up, the fumes became much stronger until when I reached the floor on which the cigar-makers worked I could hardly catch my breath.

Q. Is it a common occurrence for all employees in cigar factories to experience the same effects from the fumes as you have? A. No doubt about it.

Mr. Eisenlohr: We wrote to the superintendent of one of our plants in Lancaster and asked him for an opinion and some data as to the effect on the younger people in the factory. In this instance he refers to a stripping factory where the employee undoubtedly comes into closer contact with the material than in any other part of the cigar factory.

Mr. Eisenlohr then read a letter from Mr. M. H. Snyder, Lancaster, Pa. (See copy appended.) The question was asked Mr. Eisenlohr as to whether he had any statistics regarding the number of persons who had contracted tuberculosis while they were employees of his company. He was also asked if he had any information as to the average life of his employees. Mr. Eisenlohr stated that he did not have any statistics except that his firm have a great many instances where women have been working for twenty-five or thirty years. He stated that his company would court the fullest investigation and aid to the fullest extent in the gathering of statistics. Mr. Eisenlohr further stated that he thought the best way to obtain the information was to go through the tobacco factories. He said that his firm could give a great deal of information and that he was willing to have the same verified by the Department of Labor and Industry. Mr. Cronin asked if a list could be prepared which would include former employees of the factory in order that they might be traced within a reasonable length of time. Mr. Eisenlohr stated that it was a most unusual thing for one of their employees to leave on account of ill health. He then read a letter from Mr. Carl Werner, of New York. (See copy appended.)

Mr. James H. Maurer, President of the Pennsylvania Federation of Labor, then addressed the meeting. He stated that the Eisenlohr factories were the finest in the country, and perhaps in the world. For this reason he said he did not think it fair to make an investigation of this particular factory as it was so much better than the average.

The Commissioner: In the case of the Eisenlohr factory, which is apparently ideal for that kind of establishment, do you consider that the Department of Labor and Industry would be justified in issuing a permit to children between the ages of fourteen and sixteen? A. My

opinion is that no child under sixteen should work, no matter what the employment.

Q. A child can work between the ages of fourteen and sixteen in a machine shop and thousands of other places. Do you consider it a greater hazard for a child to work in a cigar factory, no matter how well regulated, than in a textile or similar establishment? A. A well regulated cigar factory certainly is not so great a hazard as a poorly managed machine shop or textile establishment.

Q. Suppose a textile establishment and a tobacco factory are exactly alike with the exception of the nature of the business. Would there be any distinction in your mind as to which would be the best establishment in which to place your child? A. The only difference is that they are liable to contract disease and liable to be injured.

Q. (By Major Wood.) Mr. Maurer, do you think that in as well organized a factory as the one you have described there is any menace to health on account of the product that is being manufactured? A. Tobacco is a little like liquor. Some of us may be able to consume considerable liquor with apparently no evil effect on the body, while it will be a great injury to others.

Mr. Roy Morrison, cigarmaker, addressed the meeting, stating that he had started to work at the age of 11 years. He stated that the work in a cigar factory was injurious and that he had injured his health to a very great extent through the work. Mr. Morrison said that he was forced to go to work at an early age in order to help support his widowed mother. Major Wood asked Mr. Morrison if he would have had his mother sacrificed as a contribution to society at large, and Mr. Morrison said he would, even to the point of having his mother supported by organized charity.

The question as to the amount of mental concentration required in making cigars was discussed by Mr. Levitsky. He said the work was very apt to be injurious to the nerves. In reply to a question by Mr. Wood, Mr. Levitsky stated that he did not think cigarmakers smoked more than the average. (Discussion by Messrs. Cronin, Comstock and Wood.)

Mr. J. L. Krauss, of Antonio Roig & Lansdorf, addressed the meeting. He stated that if the Board would appoint an examiner to visit the cigar factories they would co-operate to every possible extent. In this way, he said, if the work was proven injurious to children the employers would have no ground upon which to stand. The Commissioner asked the various manufacturers present if they agreed to this and they gave their unanimous consent. Mr. Krauss said that they were ready and willing to co-operate with the Board at any time. The Board agreed to make an examination of the tobacco industry in order to ascertain the effect of the work upon the employees.

The Commissioner stated that on account of the presence of two ladies who wished to present the case of the women telegraph operators, it would be necessary to adjourn the hearing on the employment of females in cigar factories. It was decided to collect all the data possible before the next meeting of the Board.

Miss Elizabeth Amend, of Derry, Pa., read a paper with reference to the effect of the new Woman's Law on female telegraphers. (See copy appended.) Discussion by Miss Amend, Miss Luther, Mr. Williamson and Major Wood. Miss Amend stated that she did not think it fair that the men should be allowed to work seven days a week when females were limited to six. She said that it was a great handicap to the women and the railroads were dispensing with the services of females and employing males. Mr. Maurer said that he did not see why the telegraphers should be exempt from the provisions of the Woman's Law. He felt that they should be glad of the existence of such a law. Miss Amend stated that the salary had been reduced by reason of the law. Mrs. Semple said that Miss Amend's complaint was quite typical and that she had a number of friends who said that they had suffered in the same way. She said that when a woman leaves the company for any purpose, a man takes her place.

The Commissioner stated that while the Board was glad to have Miss Amend present her case, it was impossible to alter the terms of the law.

Meeting adjourned at 2.30 P. M.

PAPER READ BEFORE MEETING OF INDUSTRIAL BOARD, PHILADELPHIA, JUNE 5TH, 1914, BY MISS ELIZABETH AMEND.

Where there is no abuse, no remedy is required and we railroad telegraphers feel that this law should not, in any way, apply to us, as the health and welfare of the public is in no way menaced by our employment. The six day limit is injurious to all women workers, doing the same work as men, and if that feature is not eliminated it means that just as soon as the railroad can do so, that avenue of employment will be closed to women.

Another way the law is detrimental to women workers is that most of the railroads have a retiring fund, which is based on a certain per cent of salary. Although I don't think, with the constant legislation against women workers, there is much chance of our

reaching the retiring age in the service of the Pennsylvania Railroad, yet in just the degree our salary is reduced, so is the retiring fund.

It has been decided by the legal department of the Pennsylvania Railroad that women telegraphers handling train orders are under the protection of the Federal Law, while we, who do much easier work, are subject to the State Law. This is absurd. Our work is easy. Sunday is practically a rest day, or at least a very easy day. We are required to be familiar with the rules governing trains, etc., and if called on to handle an order, to know how to do it. I will say here that since this law became effective, we have not handled any train orders. We have one and sometimes more telegraphic reports of a train fulfilling an order. If this one order is just the same as though there were many, we claim that we too should be under the Federal Law.

We have no complaint whatever against our Company. They have submitted to great inconvenience to retain our services. Our immediate superior has great confidence in the fidelity and ability of women telegraphers and I believe would have employed more. In depriving the public of the service of women in this line of employment, they are doing themselves wrong. Seldom, if ever, on our road has an accident occurred through the negligence or carelessness of a girl or woman.

I have worked twenty-seven years for the Pennsylvania Company and have a perfectly white page. This law takes from us the hope of promotion. As the day necessarily has to be divided into three periods, with lunch off, we can work only forty-five hours per week and get paid accordingly. As we have to be relieved one day each week, our Company has to retain extra men for this, and naturally it's only a question of time until they will get rid of us. Thus, you see how the law has destroyed our usefulness to our employers.

We believe that the law was not intended for us, but as you know, many of our law makers, though they mean well, make laws which have results they would be the first to decry.

COPY.

82-92 Beaver St., New York, June 4, 1914.

Otto Eisenlohr & Bros.,
940 Market St., Philadelphia, Pa.

Gentlemen:—During the pursuit of my profession as an editor of trade papers and as a contributor to many magazines, such as Everybody's, Scribner's, the Saturday Evening Post, Harper's Weekly, etc., I have had occasion to thoroughly inspect hundreds of factories, in perhaps a dozen different branches of industry. It may interest you to know, that as a result of these investigations, I have found that the cigar manufacturing trade ranks very high in point of sanitation and healthful conditions. I have found that there are several very logical reasons for this.

One is that daylight is usually reckoned as a necessary factor in cigar making in counter-distinction to artificial light, so that nearly all cigar factories are well supplied with windows, which not only supply light, but supply fresh air as well.

Another reason is that virtually nothing enters into the making of a cigar but tobacco, so that there are no offensive materials or by-products at hand in cigar factories.

Another reason is that tobacco itself is a germicide, and if you wish I can furnish you with medical records showing that in instances of plagues in Europe and Asia, the percentage of infection and mortality was particularly light among workers in cigar and tobacco making establishments.

Another reason is that the operation of cigar making, as is well known in the trade, requires no mental concentration, and in consequence entails no nervous strain. As you know very well, it is quite customary in large cigar making factories of the north to employ a musician to furnish music for the employees during working hours, and that it is almost a universal custom in the Southern factories where clear Havana cigars are made, for the Union to furnish a reader, who sits upon an elevated platform and reads to the workmen from newspapers and magazines during the entire working day.

Just the exact extent to which the above conditions are responsible for the physical condition of cigar and tobacco workers, there is no means of establishing, but this much I know, that it is a fact that the standard of health and comfort and physical fitness is higher in the cigar and tobacco manufacturing industry than in most other industries.

Very truly yours,
(Signed) CARL WERNER.

COPY.

OTTO EISENLOHR & BROS.

Lancaster, Pa., June 4, 1914.

Messrs. Otto Eisenlohr & Bros.,

Dear Sirs:—In reply to yours would say that Lottie Reese, one of the binder strippers, working in the factory about five years, came there in bad health, so much so that she was unable to work as a domestic. Since working there, do not know of her ever complaining of ill health, works every day, as you can see by payroll. This case I am most familiar with, as I knew her long before she came to the factory. There are others along the same line, such as Emma Reese, no relation to the first mentioned, Vena Rowinski, Anne Brown, Mame Sloat, Rachel Epstein, Mary Axe, Beckie Sheer, Katie Young.

The above are the ones I can recall now on the present payroll, while there had been others, if I would go back some time on the pay roll.

Very truly yours,
(Signed.) H. H. SNYDER.

COPY.

PENNSYLVANIA FEDERATION OF LABOR.

Harrisburg, Pa., May 25, 1914.

Mr. John Price Jackson,
Dept. of Labor and Industry,
Capitol, City.

Dear Sir:—I am giving you, hereunder, a copy of a resolution adopted at the recent Erie convention, in accordance with the instruction therein.

RESOLUTION.

Whereas, The State of Pennsylvania has a law on the books, that prevents girls below eighteen years of age from working in cigar and tobacco factories, and

Whereas, It is optional, on the part of the Industrial Board, to grant permits to girls below this age, and

Whereas, Some interests are at work, at present, to attempt to show reasons why the Industrial Board should grant permits to girls below this age, therefore, be it

Resolved, That this convention go on record as being opposed to female employees being permitted to work in cigar and tobacco factories, under the age of eighteen years, and be it further

Resolved, That this resolution be forwarded to the Department of Labor and Industry.

Thanking you for your attention to the purport of the resolution and anticipating favorable action thereon, I am

Very truly yours,
(Signed.) C. F. QUINN,
Sec.-Treas.

SOME PHASES OF THE INVESTIGATIONS INTO IMMIGRANT CONDITIONS NOW BEING CONDUCTED BY THE DEPARTMENT OF LABOR AND INDUSTRY.

I. POWER OF DEPARTMENT TO INVESTIGATE.

Under an Act creating the Department of Labor and Industry, the Legislature imposed upon the Bureau of Statistics and Information the duty of keeping in touch with the labor in the Commonwealth, especially with respect to the commercial, industrial, physical, educational, social, moral and sanitary conditions of wage-earners of the Commonwealth. By special provision the Department is required to "make inquiry and investigation into conditions, welfare, and industrial opportunities of all aliens arriving and being within the State, and to gather information with respect to the supply of labor afforded by such aliens, and ascertain the occupations for which aliens may be best adapted, and to bring about communication between the aliens and the several industries requiring labor; and to collect, assort, and publish statistical details and general information relative thereto."

II. SCOPE OF INVESTIGATION.

This power thus conferred is most general and comprehensive. With respect to aliens and immigrants, it places emphasis upon an

inquiry into their conditions, welfare, and industrial opportunities. Besides the strictly industrial factors, inquiry into the educational, social, moral and sanitary conditions is made mandatory on the Department. One fact must, however, be noted—that the power granted is entirely limited to investigation and inquiry, and to the publication of statistical and general information of interest to the Commonwealth. No power to initiate remedial policies is granted, or to bring about adjustments in particular instances, except to bring about communication between aliens and the several industries requiring labor. Emphasis is placed upon the necessity of ascertaining the existing conditions first and of informing the public in relation thereto.

III. NECESSITY FOR MAKING SUCH INVESTIGATION.

The need of such an inquiry will be apparent from a study of the following extracts from the United States Census for 1910:

TABLE No. 1.—Immigrants in Pennsylvania, showing total number of foreign born, and of foreign or mixed parentage, citizenship, illiteracy, age, school attendance, etc.

Total population of all classes,		7,665,111
Total population in 1900,	6,302,115	
Increase 1900-1910,		1,362,996
Per cent of increase,		21.6
Land area (square miles),		44,832
Population per square mile, 1910,		171
Native white—native parentage,		4,222,727
Number in 1900,	3,729,093	
Native white—foreign or mixed parentage,		1,806,267
Number in 1900,	1,430,028	
Native white—foreign parentage,		1,295,228
Native white—mixed parentage,		511,039
Foreign born white,		1,438,719
Number in 1900,	982,543	
White—total,		7,467,713
Negro—total,		193,919
Total male population,		3,942,206
Total female population,		3,722,905
Total white—male,		3,843,539
Total white—female,		3,624,174
Total negro—male,		95,830
Total negro—female,		98,089
Total number of males of voting age,		2,309,026
Number in 1900,	1,817,239	
Native white—native parentage,		1,129,412
Native white—foreign or mixed parentage,		371,575
Native white—foreign parentage,		260,101
Native white—mixed parentage,		111,474
Foreign born white,		741,610
Negro,		64,272
Indian, Chinese, Japanese and all others,		2,157
Per cent of total native white—native parentage,		48.9
Per cent of total native white—foreign or mixed parentage,		16.1
Per cent of total foreign born white,		32.1
Per cent of total Negro,		2.8
Citizenship of foreign born white—		
Naturalized,		248,827
Having first papers,		46,416
Alien,		367,766
Unknown,		78,601

Illiteracy.		
Males of voting age—total number,		179,982
Per cent,	7.8	
Native white—number illiterate,		23,625
Per cent,	1.6	
Foreign born white—number illiterate,		149,592
Per cent,	20.2	
Negro—number illiterate,		6,479
Per cent,	10.1	
Persons ten years and over—total number,		6,007,750
Number illiterate,		354,290
Per cent,	5.9	
Native white—number,		4,452,672
Number illiterate,		59,680
Per cent,	1.3	
Foreign born white—number,		1,390,564
Number illiterate,		279,668
Per cent,	20.1	
Negro—number,		161,126
Number illiterate,		14,638
Per cent,	9.1	
Persons ten to twenty inclusive—total number,		1,584,716
Number illiterate,		30,924
Per cent,	2.0	
School Age and Attendance.		
Total number 6 to 20 years inclusive,		2,194,303
Number attending school,		1,366,541
Per cent attending school,	62.3	
Total number 6 to 9 years inclusive,		609,587
Number attending school,		491,028
Per cent attending school,	80.6	
Total number ten to fourteen years,		711,565
Number attending school,		651,966
Total number fifteen to seventeen years,		425,259
Number attending school,		174,990
Total number eighteen to twenty years,		447,892
Number attending school,		48,557
Persons Six to Fourteen Years Inclusive.		
Total number,		1,321,152
Number attending school,		1,142,994
Per cent attending school,	86.5	
Native white—native parentage, number,		810,365
Number attending school,		714,101
Per cent attending school,	88.1	
Native white—foreign or mixed parentage, number,		411,158
Number attending school,		348,643
Per cent attending school,	84.8	
Foreign born white, number,		72,337
Number attending school,		57,604
Per cent attending school,	79.6	
Negro, number,		27,105
Number attending school,		22,475
Per cent attending school,	82,9	
Dwellings and Families.		
Dwellings,		1,507,483
Families,		1,630,628

From this table it will be observed that the number of native white of foreign or mixed parentage in the State in 1910 was 1,806,267, the number in 1900, 1,430,028, an increase of 376,239 during the ten year period. The number of foreign born white was 982,543 in 1900, but increased 456,176 during the same period. The total of all persons of foreign origin in the State at the date of the last census was, therefore, 3,244,966. Compare this with the total population of the State, 7,665,111 and it will immediately be seen the great importance to the Commonwealth of the subject of immigration. Almost one-

half of our population is of alien origin. The time is, therefore, more than passed for the State to make inquiry into the general, social, industrial and educational welfare of so large a portion of the residents within its boundaries.

For further proof of the necessity of investigation, note the striking comparison between the number of naturalized persons and the total number of aliens—248,827 naturalized citizens only, against 367,766 males of voting age who are not a part of our citizenship. No State should allow such a large body of persons to remain outside of its political life. They do not participate or interest themselves in the civic life of the nation, state or community. There is quite a difference between existing in a community and being a part of that community. Yet, it is distinctly an American duty to see that as few persons as possible fail to participate in its civic life and activities.

The high per cent of illiterate among the foreign born males of voting age (20.2 per cent) is appalling, and certainly ought to impress any resident of the State of the need of exerting greater effort in extending public evening school facilities. When one considers that there are 149,592 illiterate foreign born males of voting age and 279,668 foreign born illiterates ten years of age or over, State action seems imperative.

The same comment can be made with reference to school attendance. Of the total number of native whites of foreign or mixed parentage six to fourteen years of age (411,158) only 348,643 were attending school in 1910, i. e. 84.8 per cent. School attendance officers need to exert greater activity in enforcing the compulsory education laws. Why is the other 15.2 per cent not in school? But even worse is the percentage of foreign born whites not attending school. Twenty and four-tenths per cent, or 14,733 children of school age in this class are not in school. The total number of foreign origin, therefore, of school age not attending some school in 1910 was 77,248. This, in a State boasting of excellent school facilities, certainly merits the greatest consideration on the part of the State in general and of the local school authorities in particular.

IV. SUBJECT MATTER OF INVESTIGATION.

In the course of investigation the Department will consider the following subjects:—Legislation affecting the immigrant in a general way, or favoring or protecting him in particular; the State and municipal regulation of any business touching the immigrant or in which he may engage; the educational facilities provided by public authorities or private agencies; the kinds of labor engaged in by immigrants, the terms and conditions of employment; unemployment among immigrants; the means used by employers to obtain and retain

immigrant labor; the housing of immigrants in labor camps, lodging places, etc., in connection with industries, railroads, highway construction, etc.; the exploitation of immigrants by bankers, agents, runners, etc.; and general social and living conditions.

DISCUSSION AT THE CLOSE OF THE SESSION ON CONDITIONS OF LABOR.*

Mr. John Whitehead, Secretary of the Textile Workers of America, spoke as follows:

I want to say a word in order to encourage the representatives of associations, who have not as yet spoken. I agree with much that has been said. I believe that this Conference has been called in order to secure expressions from the representatives of manufacturing associations, insurance companies and organized labor. One-half of the time of this Conference has gone and most of it has been occupied by men who, some of us think, are partly outsiders and who have come in with written papers. I am personally going to try to encourage the representatives of labor to get up and speak from the floor. It seems at the present time that everybody is absolutely in favor of going forward along right lines, but it depends largely upon the viewpoint. That is my reason for asking the different representatives of labor to take the floor.

Mr. William Shiveley, representative of the Glass Bottle Blowers' Union, spoke as follows:

Mr. Chairman, Ladies and Gentlemen: It has been my pleasure for the past day and a half to listen to the discussion of very able men along the line of efficiency and to hear what was necessary in the way of legislation for the betterment of the condition of the men and women who toil with their hands. I quite agree with them in what they have suggested; I quite agree that it is absolutely necessary that we have labor legislation for the protection of the man and the woman who labors, and not only for them but for the boy and the girl who are forced in their early days to go into the workshops and become bread winners, to help support invalid fathers and mothers and widows in this great unequal struggle of labor in the United

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

States. It is absolutely necessary, as I have said, that we should have laws for the protection of the man, the woman and the child. I emphasize the fact that it is necessary to have these laws, but I also want to emphasize this fact very strongly, that we have to-day too many laws upon our statute books, particularly in the State of Pennsylvania, and we do not enforce enough of them. We do not enforce them in the proper manner to get the protection for the man and the woman who labors within the jurisdiction of this Commonwealth. I say to you that we cannot have too many good laws, but I also reiterate that we have too many laws written in a manner that is not good. If a law is a good one, enforce it. If a law is a bad one, enforce it and it will soon repeal itself. The best way to determine a good law from a bad one is by the enforcement of that law.

I wish to speak a word in reference to manufacturers, the employers of labor. It has been advocated here upon the floor of the Convention, by numerous speakers, that education is absolutely necessary for the benfit of the man who labors, and also for the man who employs labor. I agree heartily in that, although we must agree that the actual experience in the shop counts for much. We have men who are struggling in their homes at night to educate themselves and to fit themselves for more lucrative positions than hard labor. Every man, woman and child is entitled to it. On the other hand we have manufacturers who are so unscrupulous in their mad rush for gold, that they show an utter disregard for the welfare of the men who are working for them. They rush and scramble over the bodies of the men in order to hoard up a few dollars. I have seen a man who tried to educate himself in the principles of honesty and truth and good government whereby he might be a help to his co-worker reported to be undesirable and given notice to quit; driven to another part of the State; driven from that State into another State; driven from pillar to post by unscrupulous manufacturers. I say to you, gentlemen, that the manufacturers here to-day should take cognizance of this fact whenever they have a man in their employ who has brain and brawn, no matter whether he is a mechanic or a laborer. If he shows a disposition to elevate himself and dignify labor, (and labor should be dignified), he should be encouraged. Christ, himself, has said that the laborer is worthy of his hire and the laborer shall earn bread by the sweat of his brow. I say that the man who employs a man who labors with his hands, should honor and respect him.

I know that the rank and file of the laboring man to-day is the lover of civil authority. He recognizes law and order, but he cannot recognize oppression. We want the right to have an opinion in the discussion of all political and economical questions; we want the right to meet manufacturers; we want to meet them as business

men; we want to meet them on a business basis. It is not the intention of the laboring men to attempt to dictate policies, but it is the intention of the laboring men of this country to secure the right to go to the manufacturers and say at what price their labor shall be sold. The manufacturer, if he is honest, will meet his men on honest lines and when you convince the employer of this fact, I say to you that you will have accomplished something that is absolutely necessary according to my idea.

COMMISSIONER JACKSON: In reply to that level-headed, sensible address, I want to say there is one thing I am sorry he did not bring out and that is, that although there are many unscrupulous men who are straining every muscle and nerve to gather dollars for their stockholders, and although there are many laboring men exploiting their fellows, yet those fellows are the exception and they are the people that the law must take hold of. The people here to-day are anxious to do the things of which you speak, and I believe with that modification, if he will allow it, Mr. Shiveley's address is one well worthy of being received by this body.

Mr. William S. Griffith, International Textile Workers of America, Philadelphia, spoke as follows:

Mr. Chairman, Ladies and Gentlemen: I want to speak from the standpoint of safety and sanitary conditions in the workshop. Every unsafe and insanitary condition did not come there all at once. It was like Topsy. It was not born; it grew. We have a large number of textile men working in rooms crowded with machinery that should be guarded. This very often causes accidents; possibly not so many deaths, but a large number of serious accidents that disable the employees. The health and welfare of the workers in the factories where I have worked have not been considered very much. Anything that might benefit the health of the worker, if it would add to the cost, has been declared impractical. We hope for better conditions. I believe a great deal of this trouble has come through misunderstanding from the viewpoint of the employer. I think he does not know just what the conditions are in his shop because he is not in there very often and, of course, the foremen think they are there to cut down costs. Now, from my point of view, I hardly hope to get better conditions until we can educate the employer. No man knows what safeguards a machine should have, so well as the man who operates it. He is the man who is familiar with it.

Another great defect of our mills, especially, has been lack of ventilation. The mills have been ventilated in a way that would turn out the best quality of product. What happens to the employees at the end of the day, has not been considered. I was interested in hearing

a speaker say that if we had large quantities of water we would not want to go to the beer saloons. Perhaps you do not know what it is to work thirteen hours a day; I know what it is and I went to the saloon that gave the biggest drink. I believe that the question of proper ventilation should be taken up by the engineers. There is always a large quantity of dust that collects and, of course, it will cost something to remove it. Some people that I have seen, seem to think a place is clean if it is cleaned out with a shovel. That does not come up to my idea of sanitation. We have, in our textile industries, a large number of women and girls who have been working entirely too long hours. The machine is run automatically and the girl or child has to take care of it. There is no rest period, no slowing down on that job. The girl simply has to take care of the product as it comes out of the machine. If the machine is speeded up she has to speed up too. The result is that we are having quite a lot of sickness and a shortening of lives in very many cases. One of our speakers said yesterday that in the printing trade the enforcement of sanitary rules had added five years to the average life of the workman. If we can do that by sanitary and safety conditions, I think we will be willing to make some sacrifice and I hope there will be a better understanding. If we can get together, I believe it will be a great benefit to all parties concerned.

Mr. Charles P. Saylor, of the Hosiery Workers' Union, Philadelphia, spoke as follows:

Mr. Chairman, Ladies and Gentlemen: I was asked by my Union to try to secure better conditions in the hosiery finishing departments of the mills. It is a very unhealthy occupation and I believe a good many men could be saved from sickness and death if the conditions were improved. In some places there are windows on only one side and we are boxed in on the other three sides. We have to handle the stockings when they are very damp. There is also a great deal of steam and, on account of there being no blowers, we must inhale that stuff. We must also inhale lint all day long. These are the conditions under which we must work and I am particularly anxious to find some ways and means that will benefit our trade. These conditions have caused a lot of consumption and I believe they can be remedied. In one place there are two fans in one end of the room and none in the other end. There seems to be little use in asking for additional fans, for we have been after them for six months now. According to the law we are supposed to have a place in which to hang our clothes, but when we ask for a place of this kind they say, "Drive a nail in a post." The girls have to work under the same conditions. At one time our organization, through the District Council, sent a committee to the Chief Factory Inspector and said, "It

is against the law." We were told there was no method of enforcement allowed by the law.

COMMISSIONER JACKSON: Has anybody in this Department said that to you?

MR. SAYLOR: No. That was about a year and a half ago.

COMMISSIONER JACKSON: The question of what the conditions are at present, is the important one to us. What has been in the past is nothing to us. We are interested in what is and what can be done to make conditions better in the future. Do not let us criticise the past.

OBSERVING THE WOMAN'S LAW AND CHILD LABOR ACT.

It is with a great deal of satisfaction that the inspectors of the Department have found employers of labor doing all in their power to see that the provisions of the above mentioned Acts are being observed.

The following notices printed in display type, on cards 8½" x 11", were found posted in prominent places in one of the department stores of Pittsburgh.

SPECIAL NOTICE.

Female employees are positively forbidden to work more than six days in any one week, or ten hours in any one day. Nor more than fifty-four hours in any one week.

They are required to report both to their Department manager and the Superintendent's office if, under any circumstanees, they are asked to remain longer than ten hours, not ineluding their lunch hour.

BLANK DEPARTMENT STORE.

NOTICE TO JUVENILE EMPLOYEES.

Juvenile Employees, (boys and girls under sixteen years of age), are positively forbidden to work more than 54 hours in any one week, nor more than 10 hours in any one day, or before the hour of 6 o'clock in the morning, or after 9 o'elock in the evening.

They are required to report to the Superintendent's office, if, under any circumstances, they are asked to remain longer than ten hours, not including their lunch hour.

BLANK DEPARTMENT STORE.

It is well worth noting that this firm has more than complied with the law, as they do not permit the boys to work more than 54 hours when, as a matter of fact, the law would permit them to work 58 hours. Girls, however, are prohibited from working more than 54 hours and no doubt they felt that it would be wise and just to limit the hours of their male minors to the same extent.

SECOND ANNUAL INDUSTRIAL WELFARE AND EFFICIENCY CONVENTION.

The Second Annual Industrial Welfare and Efficiency Convention will be held under the auspices of the Department of Labor and Industry in the State Capitol Building, November 17, 18, and 19, 1914. This Convention will take up industrial safety, hygiene, and welfare as applied in the various industries of the State. It is planned that the general sessions will be followed by section meetings. At these meetings those interested in any particular phase of the subject will meet and discuss informally their own problems. The convention program will appear in a later issue of this Bulletin and in the public press.

An interesting and instructive exhibit showing safety devices and their application to a great variety of machinery will be held in connection with the convention. This exhibit is being arranged by the Engineers' Society of Pennsylvania. Those desiring space should address the Exhibit Committee of the Society.

AVOIDABLE ACCIDENTS AND RECOMMENDATIONS FOR THEIR PREVENTION.

FATAL.

DESCRIPTION:—Carpenter was working on a temporary elevator shaft on the sixth floor of a new building. He placed a brace across the opening and started to walk over on it. The brace broke and he fell to the bottom of the shaft and was killed.

RECOMMENDATION:—Only sound timbers of suitable size should be used for scaffolds, bracing, etc.

DESCRIPTION:—Laborer, while replacing a belt on a revolving pulley, was caught, whirled around the pulley and killed.

RECOMMENDATION:—No belt should be put on a pulley while the shafting is in motion.

DESCRIPTION:—Laborer while standing on a stone pile feeding a stone crusher slipped into the machine and was crushed to death.

RECOMMENDATION:—The installation of a well constructed and railed platform with a suspended rod which could be used to loosen the stone would overcome all necessity for getting on the stone pile.

NON-FATAL.

DESCRIPTION:—The sleeve of a motor inspector was caught on a set screw on the motor shaft while he was oiling a motor. He was severely bruised and cut about the arms.

RECOMMENDATION:—Safety set screws should be used, and all shafts properly guarded.

DESCRIPTION:—A baker attempted to clean a dough mixer while it was in operation. His hand was caught in the machinery and crushed to such an extent that it had to be amputated.

RECOMMENDATION:—Such machines should not be cleaned while in motion, and controlling device should be protected by some type of lock.

DESCRIPTION:—Rigger, while tearing down staging, stepped on a nail which punctured his foot.

RECOMMENDATION:—Protruding nails are dangerous and should never be left lying around where they may be stepped upon.

Vol. 1. No. 4.

MONTHLY BULLETIN

OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

SEPTEMBER, 1914

HARRISBURG, PA.
WM. STANLEY RAY, STATE PRINTER
1914

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

Richard M. Pennock is Chief of the Division of Accident Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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SECOND ANNUAL INDUSTRIAL WELFARE AND EFFICIENCY CONFERENCE.

The following letter is addressed to each reader of this monthly bulletin.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY
JOHN PRICE JACKSON, *Commissioner.*

DEPT. OF LABOR AND INDUSTRY
CONFERENCE COMMITTEE.

Lew R. Palmer, *Chairman,*
A. R. Houck,
John C. Price, M. D.
James A. Steese,
R. M. Pennock, *Secretary.*

ENGINEERS' SOCIETY OF PENNSYLVANIA

F. Herbert Snow, *Chairman, Convention and Legislation Committee*
J. V. W. Reynders, *Vice Pres. Penna. Steel Co., Chairman, Exhibit Committee.*
Robert H. Irons, *Gen'l Supt. Central Iron and Steel Co., Vice Chairman Exhibit Committee.*
Paul Gendell, *Engineers Society of Penna., Director of exhibits.*

SECOND ANNUAL INDUSTRIAL WELFARE AND EFFICIENCY CONFERENCE

STATE CAPITOL, HARRISBURG, PA.
NOVEMBER 17, 18 AND 19, 1914.

September 30, 1914.

Dear Sir: At the conclusion of the very successful Welfare and Efficiency Conference held in Harrisburg, October 28, 29 and 30, 1913, a resolution was unanimously adopted calling for a similar meeting this year. In conformity with this resolution the Department of Labor and Industry, acting in conjunction with the Engineers' Society of Pennsylvania, has called this Conference for November 17, 18 and 19, 1914 to be held in the State Capitol at Harrisburg.

It is confidently believed that this Conference will be productive of much good to employers, employes and the State at large. It is hoped and expected that your earnest co-operation will be given to this movement and that you may be able to attend in person or, at least, send a representative.

Your earnest attention is invited to the following preliminary prospectus and tentative program which outlines the purpose and scope of these meetings.

A reply indicating your interest will insure your receiving a copy of the detailed program when it is completed.

Yours faithfully,

(Signed) JOHN PRICE JACKSON,
Commissioner.

Persons who expect to attend the Conference are asked to notify the Department of Labor and Industry, Harrisburg, Pa., to that effect as soon as possible, and to make their reservations at hotels for accommodations. If not able to obtain same, apply to the Department who will give every assistance possible.

PRELIMINARY PROSPECTUS

of the

Second Pennsylvania Industrial Welfare and Efficiency Conference

to be held in the

STATE CAPITOL AT HARRISBURG

On November 17th, 18th and 19th, 1914

On the following pages you will find a preliminary program of the Second Pennsylvania Industrial Welfare and Efficiency Conference, called by the Pennsylvania State Department of Labor and Industry, and to be held under the auspices of the Engineers' Society of Pennsylvania. This conference is called for the specific purpose of determining in what manner the industries of the State and the Department of Labor and Industry can co-operate to improve the economy of production and the quality of the goods produced. One of the important methods of doing this is by improving the skill and physical capacity of the workers themselves, and reducing factors which cause irregularity in their employment. The Department of Labor and Industry is particularly organized to aid in promoting this work, by pointing out methods for improving insanitary conditions, for installing safety appliances, organizing safety campaigns and for bettering other conditions of labor. Another important way in which the Department should be able to assist in avoiding much loss is by aiding the development of a more sane and dependable way of settling disputes between employers and employes than by strikes. Other important purposes which bear directly upon this question are vocational education, best methods of compensation, workmen's savings banks, immigration and its relation to industrial conditions, etc.

The Conference is of a strictly business character, and judging by the excellent attendance and free discussions last year, it should be a very important meeting to the industries and labor interests of the State.

The program is arranged so that each day there will be a general session taking up topics of interest to every one present; also, each

day there will be sectional meetings held in different rooms of the Capitol in which topics, relating more specifically to the particular subject under discussion, will be taken up. The particular reason for these sectional meetings is that by dividing the Conference into smaller units, a much freer and more detailed discussion of a great variety of subjects can be obtained than is possible in a large general meeting.

Preliminary correspondence indicates that the Conference will be attended by many prominent representatives of the most important industries of the State and Nation. In addition to individual establishments, many strong associations representing all phases of industry are lending a cordial helping hand toward promoting the results sought.

Representatives of industrial establishments, either as employers or employes, of labor organizations, of insurance companies, or others who may be in any way interested, are urged to attend this conference and actively participate in the proceedings. It is manifestly impossible to send individual announcements and invitations over so wide a field, so that all interested, who learn of the conference in any manner, should understand that they are equally as welcome as though they had received a personal invitation.

It is hoped that, in every case, the head of an establishment can attend personally and take part, but, where that is not possible, it will be richly worth while that officially appointed representatives or committees join in this valuable movement. The expense involved will be negligible compared with the value to be obtained.

An excellent exhibit of the latest and best types of machinery, including, in particular, safety devices and appliances for improving sanitary and industrial conditions, is being installed in a large building conveniently located. This exhibit is destined to be of material value as a practical illustration bearing upon the discussion of efficiency and safety methods.

In the program following, the personnel of those opening the discussions are not given, as arrangements are not entirely completed; but work has proceeded sufficiently to insure the participation of a most desirable list of experts and others having important relations to industrial progress. These experts come not only from Pennsylvania and her industrial establishments, but also from Federal and other State Departments and leaders in this line of work throughout the entire country.

TENTATIVE PROGRAM

Pennsylvania Industrial Welfare and Efficiency Conference

HARRISBURG, PA.

NOVEMBER 17, 1914.

MORNING SESSION:—(General).

Address of Welcome.
First Year of Department of Labor and Industry.
Pennsylvania and Her Industries.
Industrial Betterment.

AFTERNOON SESSION:—(Sectional).

1. Safety Section.
2. Fire Prevention Section.
3. Industrial Hygiene Section.
4. Industrial Welfare Section.

EVENING SESSION:—(General).

Safety Organizations.

NOVEMBER 18, 1914.

MORNING SESSION:—(Sectional).

1. Safety Section.
2. Fire Prevention Section.
3. Industrial Hygiene Section.
4. Industrial Welfare Section.

AFTERNOON SESSION:—(General).

EVENING SESSION:—(General).

Motion Pictures:
Fire Prevention.
Fire Drills.
Safety Pictures.

NOVEMBER 19, 1914.

MORNING SESSION:—(Sectional).

1. Safety Section.
2. Fire Prevention Section.
3. Industrial Hygiene Section.
4. Industrial Welfare Section.

AFTERNOON SESSION:—(General).

EVENING SESSION:—(Safety Exhibit).

COMMITTEES.

GENERAL CONFERENCE COMMITTEE:

John Price Jackson, Chairman, Commissioner of Labor and Industry.
F. Herbert Snow, Chief Engineer, Public Service Commission.
George S. Comstock, Member of Industrial Board; President, Comstock Foundry and Machine Shops.
J. V. W. Reynders, Vice President, Pennsylvania Steel Co.
Henderson C. Gilbert, H. Gilbert & Son.

LOCAL PROGRAM COMMITTEE:

Lew R. Palmer, Chief of Bureau of Inspection.
Dr. John C. Price, Chief Medical Inspector.
A. R. Houck, Chief, Bureau of Statistics and Information.
R. M. Pennock, Mechanical Engineer.
James A. Steese, Chief Clerk.

(The above are all officials of the Department.)

STATE-WIDE CONFERENCE COMMITTEE:

Representative men from the various industrial centers of Pennsylvania. (Committee now being formed.)

EXHIBIT COMMITTEE:

J. V. W. Reynders, Chairman, and others.

PUBLICITY COMMITTEE:

E. J. Stackpole, Chairman, and others.

COMMITTEE ON ARRANGEMENTS:

Henderson C. Gilbert, Chairman, and others.

DIRECTOR OF EXHIBITS:

Paul Gendell, Engineers' Society of Pennsylvania, Harrisburg, Pa.

Those who are interested in exhibiting safety devices, machinery or appliances for bettering sanitary and industrial conditions, and in other allied lines of exhibits, are invited to correspond with the Director of Exhibits, Engineers' Society of Pennsylvania, Harrisburg, Pa., who will make arrangements for space, etc.

ACCIDENTS OCCURRING IN PENNSYLVANIA.

A great deal of criticism and objection was raised concerning the enforcement of the Accident Report Law which was passed by the Legislature of this State and a great many people expressed their opinion that it was an unnecessary hardship.

The last year's experience, however, has shown the wisdom of such a law. Unless a complete report is made of each accident, it is utterly impossible to arrive at any conclusion regarding the number and kind of accidents which are occurring continually in Pennsylvania. A careful study of the reports, as they are being received daily by the Department, shows that a large per cent are preventable and it is believed that after the record of a complete year is available and these reports have been classified and tabulated by the Statistical Bureau, valuable information will be on hand and suitable remedies can be suggested which will appreciably lessen the enormous toll of life and limb which is being collected from the people of Pennsylvania. The Department has been endeavoring ever since its establishment to have all persons to whom the law applies comply with its provisions. This has been done by public notices in the newspapers and individual letters and circulars to every manufacturing concern in the State. It is accordingly believed that reports are being received of the major portion of all accidents which are occurring in this State. However, there are no doubt large numbers which pass by unnoticed and of which the Department is unable to obtain any knowledge.

A tabulation of the reports received during the first eight months of this year shows figures which are well worth noting.

NUMBER OF REPORTS RECEIVED.

1914.	Fatal	Serious
January,	25	3,162
February,	41	4,153
March,	35	4,139
April,	43	4,000
May,	32	3,852
June,	37	3,806
July,	37	3,962
August,	41	3,730

A study of these figures will show that approximately two persons are killed every working day in Pennsylvania while 125 suffer injuries of a more or less serious nature. When the loss of time involved, not only to the manufacturer but to the employe himself, is considered, together with the resultant loss of wages and the extra expense of medical attendance; any attempt to lessen this

enormous waste is well worth undertaking. Especially is this true when it is a known fact that campaigns of accident prevention will give gratifying results when carried out in a systematic manner. As a proof of this statement, the following statistics can be quoted:

The United States Steel Corporation's records show that 11,074 men were saved from serious injury from 1906 to 1913 inclusive.

The Inland Steel Company of Indiana Harbor, Ind., vouch for the following:

During 1913, their accidents (including all cases involving any loss of time whatever) showed a reduction of 20.11% as compared with 1912.

During the first half of 1914, their accidents (including all cases involving any loss of time whatever) were 35% less than those which occurred in the corresponding period of the preceding year.

The New York Central Lines effected the following reductions in deaths and injuries on their four principal roads for the first four months of 1914 as compared with the first four months of 1913 and 1912:

117 fewer persons killed in 1914 than 1912; a decrease of 37%.
104 fewer persons killed in 1914 than 1913; a decrease of 34%.
657 fewer persons injured in 1914 than 1912; a decrease of 15%.
1,409 fewer persons injured in 1914 than 1913; a decrease of 27%.

The Cadillac Motor Car Company, of Detroit, Mich., report the following Accident Reduction experience:

September, 1912, to June, 1913, inclusive:	
Number of Disabling Accidents reported, ...	2,482
July, 1913, to April, 1914, inclusive:	
Number of Disabling Accidents reported, ...	880
Reduction, ...	1,602

Reduction per 1,000 employes, 22.25%.

NON-DISABLING ACCIDENTS.

	Jan. to June, 1913.	Jan. to June, 1914.	Reduction.
Abrasions, ...	5,182	4,611	11.00%
Burns, ...	342	228	33.3%
Eye Cases, ...	1,961	1,475	24.78%
	7,485	6,314	

The Pullman Company, of Pullman, Ill., through their Accident Reduction campaign, have reduced the

Average Time Loss in Minutes for Each Employe per Month from 48 minutes in January, 1913, to 14 minutes in May, 1914.

As one of the means of promoting a systematic accident prevention campaign in Pennsylvania, the Department has undertaken the establishment of a permanent safety exhibit. This exhibit was collected and sent out to several of the Fairs throughout the State, this fall, as an experimental feature, with the idea of seeing what materials and what methods would be best suited to bring this matter to the attention of the general public. A great deal of interest was displayed at these Fairs and many favorable newspaper comments were made on the educational value of such exhibits. During the next year this exhibit will be enlarged and will no doubt, as occasions demand, be sent to different parts of the Commonwealth.

Manufacturers who have devised safety devices which have proven valuable are earnestly requested to send models or the devices themselves, if not too bulky, to the Department for this exhibit. Due credit will be given to each manufacturing concern co-operating in this way. It is hoped that this exhibit may thus be made a clearing house of all devices used for the prevention of accidents and industrial diseases and that ideas originating and proving of value in one section of the State may come to the notice and be made use of in other portions of the State.

"PREVENTION OF INDUSTRIAL ACCIDENTS."*

EDWIN R. WRIGHT.

Member Illinois Federation of Labor, Vice-President National Council of Industrial Safety.

One morning a number of years ago I was staying in a little hotel in a country town in the South and dropped into the dining room for breakfast. A colored boy came to take my order, and I asked for two soft boiled eggs, some toast and a cup of coffee. Presently the waiter came back and placed before me the toast and coffee and five eggs on a saucer. I was somewhat astonished and asked "Why the five eggs?" I was amazed when the boy explained, "Mister, de cook she says she aint got a whole lot o confidunce in dem eggs, but she s'pposes at least a couple 'll be all right."

So, a few days ago while attending an executive board meeting of the National Council for Industrial Safety, and it was suggested that I speak on behalf of organized labor at this meeting, I began to open my collection of eggs to try and find a thought or two which might fit the occasion.

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

The first egg was full of statistics and the second was full of the sufferings of the workers, and so on until I had an omelette almost prepared for the cooking. Just then I remembered how a friend of mine once told all he knew and then died. So I was frightened off that tack. But it occurred to me that if I could tell you something of what the men in the shop and in the factory really thought—if I could speak as the composite worker, knowing my fellows as years of association ought to enable me to know and speak for them, and leave statistics and heart throbs and finances, and all the other kindred topics to be handled in detail by other and more capable speakers—I might do my fellows some real service.

I jotted down a point or two in trying to carry out my intention. When I use the personal pronoun, if you will excuse the traditional modestry of a professional labor organizer and consider me merely as Bill, the composite hewer of wood and drawer of water, I will try and refrain from robbing the hen coop of more eggs, if you will supply the salt necessary to hear me through.

The one thing which impresses me more than all others is that if nature had intended men to carry on the industries as they have been operated, the good old Dame would have provided her children with more suitable, or at least, more accommodating, bodies. When the world was young, to every ounce of brain and ton of bulk, a complete suit of armor plate was thrown in. If this did not quite fit into the general scheme of things, Dame Nature allowed the body to renew its members—to grow a new claw as the lobster does today.

So, if the workers in our mills and factories were intended to work without thought, and without care, and without intelligent direction, they would still be equipped with an almost solid knob of bone for a head, a spine like a section of a telegraph pole, and would either be given fingers of super-steel or, frankly, be placed in the lobster class; so that, when discharged from the hospital, they would have a new set of members well under way.

But, it isn't fair to the worker to assume that he belongs to either of the rhinoceros or the lobster classification. We Trade Unionists fought for many years to bring forward the very questions under consideration today. It may be that in our persistent demands for employers' liability laws we placed too great an emphasis on our insistence that the employer should pay real money for the accidents occurring in his branch of industry. When the tide turned, we changed front somewhat, and came forward with the more modern theories of workmen's compensation. We are still attacking the old evil, but from a new angle. With the new alignment, and new point of attack, the old theory of punishing the employer was discarded; and, as a substitute, we demanded that the accident, if

possible, should be avoided, and the idea of punishment has been given second, instead of first, place. All through our plea runs the implication that we will do our part to lessen the waste of life and limb, of suffering, and of the resultant poverty of woe and want.

We workers often liken ourselves to an army of industrial soldiers; and the comparison is not very wide of the mark, except that the man of war often passes through his soldiering career without greater menace to life and limb than a possible accident during his movement from place to place, or from an argument with the traditional army mule, while the industrial soldier is on the firing line six days of each week.

The trade union officer who is really on the job, always preaches care and caution and forethought; but he does strive to avoid making cowards of his men. The hazards of industry can and should be minimized; and one of the consequences of meetings of this kind is the danger we must face in attempting to draw the line between caution and cowardice. A man afraid of his work invariably meets with injury; so does a careless man. No inventor has yet made his machine "foolproof." We are warned to "look and listen" before crossing a railroad track; but when you do start across don't hesitate; don't do as the old lady did. She started in fear and trembling, mumbling to herself: "God is very good, God is very good!" and as she safely landed on the other side, she drew a long breath of relief and remarked: "And the devil isn't as black as he is painted, either."

With this industrial soldier of ours, we know that if he is injured, the hurt is never local. The cost must be paid by himself and his fellows, jointly, for every soldier in the hospital, we must delegate another member to care for him. It may be doctor or nurse, caretaker, assistant, or what not, but all the same, it is one more pair of producing hands gone from the creative force. This is only the start, too. First, we have the injured man, then his caretaker, then the disorganization immediately following the accident; then the shifting of employees to take up the unfinished work, with the second and third and subsequent resultant dangers of the "green soldiers" being placed in the front rank, and their extra liability to a similar fate. In all, we find that every twelfth man in our ranks meets with death or a rather serious accident each year. I am speaking of the rank and file, not the officers—they live to ripe old age.

All this costs an immense sum to the employer; but a vastly larger amount to the employees. The employer has an opportunity to recoup if he is a good business man, but the worker, who has so little, must take the loss home with him, to be shared by his wife and little ones.

A portion of the loss is pooled by his fellow workers in the trade unions; but the greater part must fall on the shoulders of the individual and his family. There seems to be no immediate hope of remedying this, even with the half-wages now being exacted under the workmen's compensation law. True, we may receive eight dollars, ten dollars, or twelve dollars a week; but we cannot share with our employer one-half the shock, one-half the pain, or one-half the sorrow that follows the ambulance or the stretcher to the hospital or the casket to the grave.

Safety laws placed on our statute books will help. A score of such in my own state, Illinois, have reduced the number of accidents to an almost unbelievable extent. Our building trades' law, for instance, in the first year of its operation, reduced the number of fatal and serious accidents 60 per cent.

Coal mining laws in Illinois show this result: Compared with other coal-producing states, our army of miners suffer 100 less fatal accidents each year than would be expected were the general ratio of the country maintained. For every fatal accident in our mines, we have three very serious but non-fatal injuries; and probably three times the latter number of lesser serious accidents.

The United Mine Workers of Illinois pay a death-benefit of $150, so you see it is good business if we were only to save the funds of that organization to the extent of $15,000 a year. Of course, I do not mean to place a valuation of $150, or any other sum, on a man's life; what I am trying to say is that we do send one hundred men, alive and well, back to their families every year, who but for our safety operation, would be filling some quiet spot in a country graveyard; and that, incidentally, we can well afford to spend considerable in furthering the work of preventing accidents, and still reap a handsome monetary profit on our investment.

My trade, that of the printer, is not a dangerous one. Most of our risks are from occupational disease. Some years ago, I served on the Industrial Commission of Illinois, which drafted the Health, Safety and Comfort Law. My organization thought so well of this law that we incorporated its provisions into our contract with our employers. It is not entirely a "jug-handle" affair, as it requires the workman to observe certain standards, rules of health and sanitation. We have tried it out for a comparatively few years; yet we find that the age at which our members die has been changed five years for the better. Bill goes home to his wife and family, and cares for his children, and sends them to school, and lives with and for them, one thousand eight hundred and twenty-six days more than he was allowed under the old order of things.

This was the result of co-operation. The employer could not have accomplished this without help. Neither could we have done it un-

less he had met us part way. Our health, safety and comfort law cost the employers of Illinois seven and one-half millions of dollars the first year of its operation and costs more millions every year since that time. They installed safety devices, ventilating apparatus, washing facilities, and generally embarked upon a real "Safety First" campaign. Now, they seem ready to attempt the working out of the second phase of the work; and again I believe the workers will meet them half way.

So far, we have been engaged in "sore thumb" work. If a man has a sore thumb, every one he meets knows it. It is one of the most obvious of injuries; and only needs to be seen to excite sympathy. So, I have observed that when we contemplate any work really worth while, any real reform, whether in business or industry, you must care for the most obvious thing first; the "sore thumb." When you do that, you are ready for the second step of the program—that of preventing thumbs, now well and whole, from being injured.

I am glad to be here; glad to have been of service in "healing thumbs;" but I want to embark in the *real* work we have been outlining; that of really preaching and working for the real disarmament of Nations.—*"The Prevention of Industrial Accidents."*

MILL SAFEGUARDS*

L. H. BURNETT.
Carnegie Steel Company.

The Act of Assembly of Pennsylvania approved May 2, 1905, provides inter alia that "all vats, pans, saws, planers, cogs, gearing, belting, shafting, set-screws, grindstones, emery-wheels, fly-wheels and machinery of every description shall be properly guarded." This particular provision was not new and was taken "word for word" from the New York Factory Act. We see, at a glance that the act is sufficiently broad to cover all manner of machinery, but leaves to the employer to judge what shall constitute a proper guard in any particular case.

The Act of 1905 was the opening wedge in the campaign for better and safer conditions in our great industrial establishments, and

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

was especially applicable to the manufacture of iron and steel, always classed among the more hazardous occupations, by reason of the fact that its processes involve the lifting and moving of heavy loads and the constant handling of hot and molten metals.

The growth of the iron and steel industry, especially in Pennsylvania, has been nothing short of marvelous, and the wonder and admiration of the whole world. New mills and furnaces have appeared as if by magic. In the early days, the processes were simple and much of the work was done by hand. Today the work of many hands is done by intricate and ponderous machinery. The process has become complex and requires the exercise of the greatest care and skill to prevent accident.

It is well known to all of us that all requirements of the Act of 1905 have not been met, and that such perfection in safeguarding all kinds of machinery cannot reasonably be expected for some years to come.

It is a fact, however, that within the last few years, wonderful and commendable progress has been made in our mills and industrial plants from a safety standpoint, not only in the installation of safeguards, but also in the equally important matters of providing better lighting facilities, better sanitary appliances and better working conditions in general.

Many employers have made every effort to properly protect dangerous machinery, exposed gear-wheels have been covered, projecting set-screws have been counter-sunk, and belts and shafting have been guarded. The more obvious dangers have been cared for. It is often difficult, however, to convince the practical mill man that the uncovered gear-wheel, even though in an inaccessible location, is a real danger or that smooth, revolving shafting can cause trouble. A study of industrial accidents will soon convince him, however, that men are constantly doing the unexpected thing in their daily work and that such devices, even though located in "out of the way" places should be properly guarded.

It follows, therefore, that the Act of 1905 should be strictly observed and *all* gears and *all* machinery should be properly guarded. It is not a sufficient answer to say that no employe is ever required to go to a particular place, or that if he does go there he is provided with means to protect himself. Experience teaches us that someone will, in the course of time, go to that place and probably be injured, unless he is afforded the proper protection.

While a great deal has been done in safeguarding machinery, an inspection will reveal that such work has not always been well done. Many such guards will be found to be too light, or otherwise inadequate for the purpose intended. One of the most important duties of a safety inspector is to get the best device to be found, adopt a

standard, and see that it is properly installed. It is also his duty to see that guards are kept in place at all times. An inadequate safety device is much more dangerous than an unguarded machine.

The gradual adoption of electric power in our mills, with the direct motor drive for each machine, eliminating the dangerous shaft, pulley and belt will be the means of preventing many serious accidents in machine shops and similar plants. Where such installation is not practicable, some form of belt shifter should be used.

The employer in purchasing new machinery, should insist upon the manufacturer furnishing all necessary safeguards with the machine. We have adopted the rule that all specifications and drawings for new machinery shall be approved for safety before bids are asked. The same rule applies to new buildings and structures of every description.

We must not lose sight of the fact that the mere installation of safeguards plays a comparatively small part in accident prevention and even when we have reached the perfection required by the Act of 1905, much will remain to be done.

For several years, the Illinois Steel Company made a careful classification of all accidents in its mills, with the following average results: Accidents due to trade risks, 23 per cent; to negligence of the company, 6 per cent, and to negligence of workmen, 71 per cent. Accidents due to lack of proper safeguards are included in the 6 per cent attributed to negligence of the company. It is clear, therefore, that the problem cannot be solved by safeguards alone.

Proper lighting plays a most important part in safety work and here again we find wonderful progress being made. The substitution of tungsten lights for the arc light has added greatly to the general lighting facilities of our plants. One of the chief advantages of the tungsten light is, that it may be placed upon cranes and other moving machinery where light is most needed.

The matter of proper natural light and ventilation is a most serious one in our older plants as it is almost impossible to make any material improvement in conditions, except by a practical reconstruction of the buildings. Some improvement has been made, however, even in existing buildings and these features are well cared for in our modern mill buildings. In some instances elaborate and costly platforms have been installed to permit the cleaning of skylights and windows in a safe manner.

A most important element in all safety work, and one that is often ignored by those in authority, is the absolute necessity of a general appearance of neatness and good order about the yards and buildings. Billets, bars and other material should be piled in an orderly manner and kept back a sufficient distance from railroad tracks to permit trainmen to ride on the side of cars in safety. The workman

who adheres to the rule "A place for everything and everything in its place" is, of necessity a careful workman and one who will perform dangerous work in a safe and careful manner. Neat and clean surroundings have an undoubted influence for care on the part of the individual. If, on the other hand, he is required to work amid scenes of disorder, if the mill floor and yards are littered with refuse and loose material, he will become careless and slovenly in his habits, do his work in a slipshod manner, and be much more liable to personal injury.

We have found, that the planting of grass plots and flower beds at suitable points throughout the works, has the effect of stimulating the men to greater efforts in keeping the entire plant clean and neat. In many instances, the men themselves have taken care of the grass and flowers during their rest periods and in several cases there has been a friendly rivalry as to which department should have the finest flowers.

There can be no clear cut division between safety, welfare and sanitation. One is a direct aid, or supplement to the other. The furnishing of pure drinking water by means of sanitary fountains, doing away with the common drinking cup; the construction of sanitary water closets; the installation of wash-rooms, shower baths and lockers, in short, everything which contributes to the physical well being of the workman, is a direct safety measure and just as important as the guarding of dangerous machinery.

"An ounce of prevention is worth a pound of cure," but "accidents will happen" and we must be prepared to give immediate surgical attention to the injured and provide properly equipped emergency hospitals. Where the number of employes justifies it, the hospital should be in charge of a surgeon or trained nurse at all hours and the men should be taught to report to the hospital for the treatment of even the slightest injuries. In this manner many cases of infection are prevented resulting in a great good to both workmen and employer. Whenever necessary first aid instruction should be given to selected men in each department.

The one most important problem confronting the safety man today, is to keep constantly before the workman the necessity for exercising care in his daily work. The organization of plant safety committees consisting of superintendents, foremen and other employes has done much to arouse the interest of the men in safety work.

The Carnegie Steel Company has installed at its several plants about one hundred bulletin boards, uniform in design and construction, which are devoted solely to the display of articles and photographs pertaining to safety work. During the past winter, we gave twenty-one safety entertainments to more than fifteen thousand of our employes. The entertainment consisted of music, moving pic-

tures and lantern slides and we made a special effort to point out dangerous practices which should be avoided. We found the entertainments to be effective in stimulating a general interest in safety.

The National Tube Company has adopted, as an experiment, a system of bonuses to foremen and others in direct charge of operations. The amount which a foreman will receive depends upon his ability to decrease the number of accidents in his department. The plan should be successful, as the foreman is the one most important factor in safety work. He can do more than any other individual in seeing that his men are properly instructed as to hazards; are given a safe place in which to work and that they do their work without taking unnecessary chances.

Much has been done in the safety movement, up to the present time, but much more remains to be accomplished. The work today is attracting the attention of many earnest and intelligent men in all walks of life. Within the last few weeks, there has been organized in the city of New York the National Council of Industrial Safety. It is the purpose of this organization to make a thorough study of accident prevention and to act as a clearing house of information as to all matters pertaining to industrial safety. The officers and directors are all competent and enthusiastic safety men and have a wide and varied experience in the work. A membership in the National Council for Industrial Safety will, undoubtedly, be of great value to every man who is interested in the subject.

By the Act of June 2, 1913, Pennsylvania created a Department of Labor and Industry, giving to such department broad discretionary powers in all matters pertaining to industrial safety, sanitation and welfare. The men in charge of the various branches of that department, by reason of their training and experience are eminently fitted to carry on the work assigned them. They are worthy of the respect and confidence of the citizens of the State.

If all men connected with our industries, from the highest to the lowest, will give them the support and co-operation which they deserve, it will be but a short time until Pennsylvania will excel in all that pertains to that Department.

GENERAL ACCIDENT HAZARDS.*

JAMES B. DOUGLASS,
Manager, Claim Department, United Gas Improvement Co., Philadelphia, Pa.

When thought is given to the many activities of every day life, it is remarkable how little the average person seems to think or care about the hazards on every side. As a rule one does not see how they

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency at Harrisburg, Pa., October, 1913.

can affect one. Even where a man has witnessed an accident due to carelessness, the lesson is shortlived at best. He may have his own ideas as to who or what was to blame, and thinking that he will not make the same mistake, becomes possessed by a feeling of security and self-sufficiency which at times results in the happening of the very accident against which he should have been forewarned through the experience of his fellow man.

It has been well said that *accident prevention saves misery and money.* Until the last few years this two-fold saving has not been appreciated, and in striving to increase outputs and sales the avoidance of accidents has been overlooked as one of the big factors reducing the cost of operation. Employers have been somewhat slow to awaken to the fact that most of the many simple accidents could have been avoided, and have not seemed to consider seriously the great double saving to be effected through prevention.

Realizing that the efficiency of a working force depended to a great extent upon this freedom from accidents, The United Gas Improvement Company has for years taken a keen interest in prevention. This work, which is now receiving special attention from all the leading industrial organizations, took form with us in 1906, back to which time date the first systematic activities of our department in the work.

Today, employers clearly recognize the great humane and economic advantages to all concerned through the elimination of accident hazards. Of course we can never reach the point when occupational accidents or those incident to labor can be entirely eliminated. It is the opinion of those well informed on the subject, however, that in the absence of systematic prevention work, an employer will have to contend with 30 to 40 per cent more accidents.

We believe that the best way to keep down the number of accidents is to educate employes on the subject of safety, through talks, bulletins and lantern slides; further, that keeping the subject constantly in their minds will do far more for the good of the cause than all the preventive devices that can be designed. To obtain the *best* results in the line of prevention, the words "Be Careful" should be indelibly written in the mind of every man.

Preventable accidents may be classified under the following heads:

First: Use of wrong method by the workman.

Second: Carelessness by the workman of his own safety and that of his fellow-employe.

Third: Defective or unguarded machinery, tools, appliances, etc.

The largest number of accidents falls in the first two classes, and of course only care on the part of the workman as a class will reduce the number due to those causes. The suffering and loss in time and efficiency, due to accidents, surely warrants the exercise

of the greatest care on the part of the men in the prosecution of their work. The *safe* way is the *progressive* way of protecting both the workman and his employer. A catastrophe avoided may mean lives saved and receiverships averted.

The following illustrations of conditions, which actually have, or at any time might have, caused serious accidents, have been secured from various sources scattered over the eastern half of our country, and I trust that they may, through suggestion, be effective in helping some of you to promptly recognize similar hazards should they exist, in which you may be interested. (A number of lantern slides were shown by Mr. Douglas.)

In 737 cases out of 2,200 analyzed, at least one day's time was lost. The total time lost was 4,602 days, or, on the basis of 300 working days, nearly 16 years. The average loss of time in cases where at least one day's time was lost, was 6 2/3 days, or a working week.

Of the 2,200 accidents, about 65 per cent. resulted in loss of time that amounted only to that necessary for the proper medical attention. On the other hand, in many cases the employe was assigned to other work not necessitating the use of the injured member. However, in all cases, the suffering, inconvenience and interference with the regular line of work were such (and so many of the accidents could have been avoided by the simplest of precautions), that these figures furnish a powerful argument in favor of the value of care.

There were instances, in which the prompt and efficient administration of first aid treatment lessened the injury to such an extent that the time lost was almost negligible. In minor injuries, however, the danger of infection through lack of attention is such that no one can afford to take chances.

It may be of interest to hear that in one particular instance of big construction work, as a result of careful supervision of men and methods by the superintendent in charge, accompanied by frequent hazard inspections, to date, over four months of what is considered unusually dangerous work,—work on which bad accidents are bound to occur,—have passed without a single serious injury.

We, of course, realize that some accidents must occur, that we cannot continue to be so fortunate, but we feel that the results of this co-operation will be most gratifying in the end.

Of over 1,600 recommendations for the elimination of accident hazards advanced during the past 14 months, probably 95 per cent have been acted upon favorably by our Superintendents and Managers, who are all taking a live, co-operative interest in the subject.

I trust that this little talk may carry us all at least one step nearer the goal we are seeking—***Safety Everywhere, Always.***

ACCIDENT STATISTICS*

FREDERICK L. HOFFMAN,
Prudential Insurance Co.

I feel that we are all obliged to Dr. Patterson for visualizing for us some of the ways and means by which industrial dangers can be and ought to be prevented. He has shown us perhaps a hundred different causes that are responsible for a truly enormous loss of life and limb in this country—a loss of life and limb so great that we are not entitled to call ourselves a civilized nation until a large proportion of that loss is done away with. It is all very well to indulge in self-praise and call ourselves fine names and speak of American efficiency in this direction or that; but just as long as we continue to injure, more or less seriously, over two million persons each year, we are not entitled to call ourselves truly civilized. Dr. Patterson has shown us the facts in detail, for some of these injuries; the cut-off fingers and the cut-off limbs, that figure but little in the newspapers, but much in the life of the working-people. We hear very little about the injured in our industries, but if you were one of the victims and had to spend the rest of your life without one leg or one arm, but otherwise had still all the health and strength of a God-given body, you would not think lightly of the one-line notice in the newspaper, referring to "only a few injured and none killed."

Our manufacturing industries employ about eight million wage-earners; we employ about a million and a quarter men in the mines and perhaps a million and a half on the railways. Altogether, about 30,000,00 men and women work for wages from one end of the year to the other; of these there are about 35,000 killed and over 2,000,000 injured, more or less seriously, and such a loss will continue as long as the conditions of work remain unchanged. While an improvement is taking place, the betterment is by no means what it should be and what the man who works chiefly with his hands, and for relatively low wages, may rightfully insist upon.

It must be gratifying to us who meet here in this great convention to consider these important questions, but it is a deplorable fact that this should be the first gathering of its kind ever held in this country. It is all very well to talk about the progress we have made, but as long as we continue to waste some 35,000 lives each year (and we have about the highest rate of industrial accident in the world) I feel you will agree with me that what we need is to know first, what the actual risk in our industries is, where the fault lies, and what con-

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency, at Harrisburg, October, 1913.

ditions can be most easily remedied. One of the best indications of progress, is that we are gradually adopting a fair measure of compensation to be paid to those who are injured in the course of employment, to be obtained as a matter of social justice and not by means of drawn-out lawsuit. Frankly, however, the most liberal pecuniary compensation will furnish but an inadequate return for the terrible economic losses that are sustained by our wage-earners, who mine our coal, who run our railways, and who do the many other essential things, that all of us may live in comfort and security.

You may inquire perhaps as to what are the facts in regard to these 35,000 lives lost and the 2,000,000 or more wage-earners injured annually. It is a safe estimate based upon a fair amount of satisfactory data for certain industries and sections, assumed to apply to the country as a whole. Neither the government nor any state in the Union has thus far made more than a beginning to collect conclusive industrial accident statistics, and you may inquire of one industry after another in this or any other state, and few, if any, can tell you what the real loss of life and injury to limb is, or has been in the past. You may go to any large number of employers of labor and ask how many men have been injured or killed during the last ten or fifteen years, and you will learn that the employers have only commenced to keep records during the last year or two. The loss of life and limb in the past has been a matter of small public concern. The economic burden for such accidents was shifted upon the employe, and compensation was paid only after a long drawn-out lawsuit. It was assumed that, as a rule, the employe was at fault. Of course, there have always been fair individual employers, but these have been the rare exception. The doctrine of Employers' Liability was the rule and the burden of proof as regards negligence, was upon the injured employe or his unfortunate dependents. Dr. Patterson gave us some illustrations of railway cars and engines, where there was a board in the front so that a man could easily stand on it. Why, in the name of common sense, was it put there, but for the men to use at the risk of life and limb? There is no real need for it, other than that the men will save a little time in their trips from one end of the railroad yard to the other, making this saving at a terrible risk of life and limb. What we need is data of real value, brought together by men who are qualified to collect and tabulate useful statistics. We do not want enormous reports, containing little valuable information. It is a crime against society when a State Bureau fails completely in its duty to give the public a concise account of essential facts, and in place thereof gives nothing but useless, worthless, misleading statistical or other information in return for the taxpayers' money. What we need is the most trustworthy statistics, that will establish the truth and show how many

men in proportion to the number employed are killed annually, and injured, the time when and the place where these injuries occurred, and, as far as possible, the contributory causes responsible therefor. It will not serve the purpose to give such facts simply in the form of a statistical table. A qualified analysis of the data is essential, for if you do not thoroughly analyze those reports, if you do not give to every serious accident at least a few lines of descriptive information—as, I am glad to say, the Pennsylvania Bureau of Mines has done for many years—it will not serve the real purpose for which these statistics are collected by the State, often at very considerable expense. But even the Bureau of Mines has never considered it worth while to bring these facts together. I spent some weary months working out the nature of injuries in non-fatal accidents in the Pennsylvania coal mines for the last five years, and which, for the first time, illustrates how the men were injured, what portion of the body was injured, and many other particulars of vital importance. Such an analysis in detail is the legitimate function of a Bureau of Mines, just as much as of every Department of Factory Inspection. We have a right to insist upon the publication of a statistical table that will inform any one of a reasonable degree of intelligence what our position is in industrial safety, in comparison with other nations of the world. When, for illustration, we are made to understand that the mining fatality rate in Belgium is only about 1 in a 1,000, and that ours is 3 and sometimes 4, we cannot but feel convinced that something must be wrong with our own method of mining, however effectively otherwise the industry may be carried on. A carefully selected set of slides of mining methods was shown to us last evening, but very few brought out the actual hazards that the men underground have to contend with.

I have brought together for your own information a few facts in relation to the nature of the injury in non-fatal accidents in certain occupations, simply to visualize how fundamentally different, for illustration, the accident liability of the railway laborer is from that of the mine laborer, and why the one is often interested in a totally different problem of compensation than the other. The highest proportionate loss from injury to the face and head, for example, is among railway employes, where 26 per cent. of all the non-fatal accidents occur to the head and face. The lowest proportion of accidents of this kind occurs among bituminous coal miners, who are exposed to entirely different conditions of risk. Dr. Patterson exhibited a very pathetic illustration of a man who had lost the sight of one eye. You will probably find thousands of such men throughout the land. It is not fair to charge the injured with gross carelessness and indifference to a risk known to them. When a man does a hard and dangerous day's work, year in and year out, and the same kind

of work over and over again, the main problem which confronts him is that the work is done as well as it can be done in return for the wages paid, and not in accordance with an accepted theory of industry, worked out by men who, as a rule, have little real knowledge of the facts of labor and industrial life.

A workman may be and he often *is* careless, but the work he does is essential and needful to the nation and it is only simple justice that he should not be made to bear the economic consequence of the risk inherent in his trade. If we consider that the employer himself has only but recently awakened to the need, for instance, that certain employes on dangerous work should wear goggles, or that other safeguards should be provided for his protection, surely we cannot blame the workman if he does not take kindly to their general adoption and use all at once.

Ten per cent of all the injuries in iron mines are injurious to the eye. Think of the man who sits on the corner with a cup in his hand! At one time quite probably that man was a useful citizen, but a piece of steel in his eye made him industrially useless. I believe you will agree with me that, when we have more convincing facts and more illustrative material, we shall be in a better way of understanding what this accident problem is, and bring cause and effect more closely together and put the responsibility where it should be placed and not indulge in a lot of guesswork as to who is and who is not responsible.

We should adopt a uniform method for the collection of accident and other industrial statistics, a uniform blank for the reporting of such accidents, and men of the required ability should be employed to tabulate and analyze the data with accuracy and impartiality and for practical purposes only, and not as a contribution to the paper mill or literary junk pile. I have an analysis here of the accidents to the upper extremities. Fifty-one per cent. of all the nonfatal accidents to railway employes in New Jersey are to the arms, the hands, and the fingers. Do you wonder, when you recall the pictures shown by Dr. Patterson, why it is that these accidents occur with such lamentable, frequency, when employes are permitted and encouraged to take the very risks which they ought not to take. No amount of instruction and no amount of placarding will ever do one fraction of the good that the removal of the cause itself will do. No open hole with signs all around it warning the passerby not to fall in, is equivalent to the covering of that hole so that an accident is made impossible. It is not enough to issue quantities of educational literature and thousands of warning signs and red posters, or blue and yellow posters, if you please, informing the workmen to keep out of danger and avoid needless risks. Take one industry after another and you will find a vast amount of exposure to unnecessary risks,

to open gearing, belting, shafting and so forth. Not until you express all these existing dangers in the form of statistics, and not until you make every employer state the full truth as to what is really happening to the employes, not until you make a really serious and complete inquiry into every accident that has happened, will you accomplish the desired end, of reasonable safety in American industry.

In other words, we must first have information that can be absolutely relied upon. I believe you will agree with me that your new Department of Labor and Industry, or any other Labor Bureau, is only fulfilling its real function by giving absolutely trustworthy information, statistical or otherwise, instead of merely a lot of meaningless figures, bound in a report of ponderous size. This can be done if you will place yourself in the position of the workman and try to understand from his viewpoint what information the public is entitled to have in regard to the accidents in which he or his fellow-workmen come to grief.

GOOD HOUSEKEEPING.

Fire Prevention. *Sanitation.*

The question often arises, what is Good Housekeeping in relation to a manufacturing or industrial plant? With an idea of giving some suggestions along that line, the following items are presented. They comprise the main points to be considered. To make them valuable, rules embodying these features should be formulated and then after posting them throughout the plants they should be strictly enforced.

Provide metal receptacles with self-closing lids for all oily and greasy rags or papers and empty them daily.

Allow no accumulation of rubbish in closets, under stairways or in unfrequented places.

Permit no depressions or recesses in floors or walls wherein rubbish may be swept or thrown.

Keep all combustible materials away from all steam or other heat conductors, stoves, furnaces, boilers, etc.

Gasoline, turpentine, paints, oils, varnishes and all explosive and inflammable materials should be kept in a separate fire-proof building suitable for this purpose.

Frequent inspections of all lighting fixtures should be made to insure that they are in a safe condition. If open gas lights are present the brackets should be of the rigid type and suitable wire guards should be installed to prevent combustible material being blown or pushed in contact with the flame.

Electric wiring especially needs attention to see if insulation is intact, connections tight, proper fuses installed and that danger of short circuiting is eliminated.

The use of all artificial lights such as from matches, open torch, candles should be at all times prohibited. Where it is necessary that a temporary light be used, it should be an electric flash or extension light or a standard type lantern kept in good condition.

Matches, if necessary, should be of a safety type.

Smoking should be prohibited within all buildings.

Clothing of employes should be confined in metal lockers and should not be hung on the walls or thrown promiscuously about the workroom.

Foors, walls, ceilings, hallways and stairways should be kept clean, and free from dust.

Toilets, receptacles for drinking water and all sanitary appliances should receive a daily inspection in order to ensure a sanitary condition.

All garbage cans or barrels should be kept tightly covered and emptied daily.

In brief, good housekeeping embodies the removal of conditions which might tend to make a plant unsafe from the standpoint of fire or health.

MONTHLY BULLETIN.

Many letters of a commendatory nature regarding the Monthly Bulletin have been received by the Commissioner. This is extremely gratifying, and acknowledgment is hereby made of all letters of this type. It is the endeavor of the Department to bring employer and employe closer together, as it is felt that this will be the only means by which our labor problems of the present day will be solved. It is hoped that the publishing of this bulletin will be an aid to this

end. It seems that these plans are meeting with some degree of success, as the following letter which was recently received would indicate:

"John Price Jackson, Esq.,
Commissioner, Dept. of Labor & Industry,
Harrisburg, Pa.

Dear Sir: Permit me to again compliment you and your department on the Bulletins issued. More can be accomplished by gradual education in the right direction than by formal law.

The interesting talks in your Bulletin will ultimately bring home to both employer and employe better conditions and more cordial relationships, which in time are bound to increase the wealth, comfort and happiness of all.

We pass the Bulletin along to members of various departments. They are read with much interest."

In order, however, to be of the greatest possible service suggestions regarding the material which should appear in this bulletin are invited from any interested parties. Any articles for publication which may be submitted will be given careful consideration. It is earnestly hoped that employers and employes alike will feel free to offer suggestions, as it is only by co-operation of this kind that material service will be rendered.

SOFT COAL AS A FIRE HAZARD.

Very few people have any idea that soft coal is often the source of fires. In many cases it has been found stored in wooden bins or piled against wooden partitions in damp places. During an inspection of the property in which a theatre was located, the cellar was examined and it was found that one portion of the cellar had been partitioned off and used as a store-room for discarded packing cases and packing material of a five and ten cent store located in an adjacent property. Against the partition which divided this portion of the cellar from the furnace room, there were stored many tons of soft coal piled to a height of from 10 to 15 feet. The owners of the property did not appreciate the danger from this condition and no doubt many other persons are entirely unfamiliar with the perils which might occur from such a setting. Experience and investigation have proven that soft coal will ignite spontaneously under certain conditions when piled to a height of 8 or 10 feet or more and left standing for any considerable time. Heat first develops internally and in due time the temperature is raised to an ignition

point. Naturally, if combustible material is placed against piles of this type, there is continual danger of its being ignited. To make matters worse, in this particular establishment, steam pipes which conveyed the heat to the auditorium of the theatre above, ran along the sides of the wall through this pile of coal.

As soon as the owner of the building was notified of this condition, he took steps to remedy it and a danger was eliminated which might have terminated with serious results. If at any time smoke should have risen from that cellar into the auditorium of the theatre located above, a panic might have ensued with accompanying fatalities. The only safe way to store coal of this type is in small piles in bins of metal, stone or fire-proof material. In no case should combustible material touch or be near soft coal, and steam pipes should not be permitted near storage piles. Frequent overhauling of the pile is advisable, as this will absolutely prevent rise of temperature and its attendant dangers.

AVOIDABLE ACCIDENTS AND RECOMMENDATIONS FOR THEIR PREVENTION.

(These accidents have been taken from accident reports recently received by the Department.)

DESCRIPTION:—A carpenter's helper had climbed a ladder and was removing sheeting from a building when the bottom of the ladder slipped causing him to fall about ten feet to a platform below.

RECOMMENDATION:—All ladders should be equipped with some form of "non-slipping feet."

DESCRIPTION:—A glass packer slightly scratched his right wrist but paid no attention to the wound. Later blood poison developed.

RECOMMENDATION:—Every injury causing a break in the skin may lead to blood poisoning and should be cleaned and protected at once.

DESCRIPTION:—A crane operator lost control of the trolley and before he could turn off the power, the hoist ran into the sheaves causing the chain to break. This fell on a bricklayer who was working below and injured him severely.

RECOMMENDATION:—A limit switch would have prevented this accident.

DESCRIPTION:—Some material rolled into an elevator pit and a laborer went in to get it. While he was in the pit some one pulled the elevator rope and the elevator came down and severely injured him.

RECOMMENDATION:—Starting ropes should always be equipped with locks which are to be used whenever any one is working about the elevator shaft or machinery.

DESCRIPTION: A steam fitter was carrying a piece of pipe through a building when he stepped on a nail sticking through a piece of wood.

RECOMMENDATION:—These injuries are dangerous and can be entirely prevented by using care in keeping the floors clear of refuse material.

DESCRIPTION:—A weaver wishing to pull back the lathe of a loom on which the weave was not running properly, instead of walking to the side and turning the lathe back by means of a hand-wheel provided for that purpose, placed his knee against the roll and pulled the lathe back by hand. The roll is covered with pins about the length of an ordinary pin used for domestic purposes. These hold the tapestry to the roll in order to afford proper wrapping. The pins penetrated this weaver's knee and without giving it any attention or telling any one of the incident, he worked on for three days. On the fourth day the employers received word that he was dying from blood poisoning produced by these pin pricks.

RECOMMENDATION:—Workmen should always use the hand-wheel provided to turn back the lathe; even when the material is of such thickness that the pins do not protrude beyond the surface.

COPIES OF LABOR LAWS.

The Department has on hand a large supply of pamphlets containing the different labor laws of the State. These have been prepared for distribution and will be sent, all charges prepaid, to any person wishing them. It is hoped that employers and employes will avail themselves of this opportunity. Address all communications, stating number wanted and giving name, address and shipping directions clearly, to the Department of Labor and Industry, Harrisburg, Pa.

ACCIDENTS AND DISEASES IN THE FACTORY—TIMELY HINTS TO EMPLOYER AND EMPLOYE.

FOR THE EMPLOYER.

Accidents to and Diseases of your Workmen Impair Efficiency;
- Usual routine is interrupted.
- A "green" man is necessary or machines stand idle.
- Production is lessened.
- Quality is reduced.
- Action for damages may result.

Protection to your Employes against Accidents and Diseases reduces Costs and Increase Production, therefore:

Guard:
- Machinery and dangerous places.

Provide:
- Proper drinking water.
- Good ventilation.
- Sanitary toilets.
- Proper light.

Then you will have the increased efficiency, loyalty and co-operation of your employes:

FOR THE EMPLOYE.

Breathing dusts continually leads to Consumption and Lung Trouble:
- The exhaust systems provided for dust creating machinery should be used and maintained in operating condition.

Impure air lowers your vitality:
- Properly regulate and maintain all means used for ventilation and keep toilets in sanitary condition.

Unguarded Machinery and Dangerous Places may mean loss of Life and Limb:
- Guards are installed for your protection.
- See that proper use is made of them, not only by yourself but by others.

Accidents and Diseases mean:
- Loss of income.
- Increase of expense.
- Possible total or partial disability.
- Impaired health.
- Worry.

Untold suffering.
Co-operate and promote all means used for your protection.
Do all in your power to assist in preventing any abuse of that which has been provided for your safety and comfort.

The above has been prepared in folder form. Copies, with all charges prepaid, in any quantity can be had on application to Department of Labor and Industry, Harrisburg, Pa.

INFORMAL DISCUSSION DURING THE 1913 CONFERENCE.*

Mr. Charles L. Huston, Vice-President of the Lukens Iron and Steel Company, spoke as follows:

Mr. Chairman, Ladies and Gentlemen: I am a manufacturer and employer and as such have been much interested in the working man. I have reason to see, to some extent, both sides of the question, having been not only an employer of men, but having been interested in mission Sunday school work where I could see the children of the employes come in, see them drop their pennies into the missionary collection and have them take part in the exercises. In this way I know both sides of the question and I know that the whole family happiness and health depends on the regular receipt of the income that the head of the house receives.

We have heard expressions here, as we have learned before, of the co-operation between employer and employe. It is human nature that when one man starts a fight the other man is likely to fight, too. I can recall an illustration I was given as a boy, of a man and his wife quarreling over a cow. The wife was pulling at the cow's tail and the husband was pulling at the cow's head, and neither one could get the cow to move, but the lawyer was sitting down in the middle milking the cow. We all recognize that it is best for us to get together and pull in one direction. We should consider that our interests are mutual and that we should come together in a friendly spirit. I am certainly very thankful for this convention. As we go into the study of the subject, we go into the source of our trouble, finding out not only the answer to the question of public welfare and safety in the mills, but getting at the causes of the troubles; reaching further, further back. We have a big but a very fertile field before us, and, as I said, I believe much good will come from this convention.

Mr. Philip Knopf, of the Bakers Union, Pittsburgh, spoke as follows:

I represent the Bakers' Union of Pittsburgh, and, as you well know, bread is the staff of life. We are not ashamed of our occupation, by

*Part of the proceedings of the Pennsylvania Conference on Industrial Welfare and Efficiency, held at Harrisburg, October, 1913.

any means, and consider that we occupy an important position in the industrial world. I wish to say, however, that it is a very great hardship for a baker to work in some of the shops in Pittsburgh. The conditions are deplorable. My union received a communication from Commissioner Jackson and after a special meeting I was appointed a delegate. I can tell you the conditions that exist in many of the bakeshops of Pittsburgh, as I am a baker by trade and know what the men in that line of work have to suffer. The people who eat the bread that is made in these shops, are the ones who are really to blame for the frightful conditions. I say to you that some of the shops have ceilings so low that it is impossible for a man to stand upright without knocking his head. Such shops as this sometimes employ from two to four men. You can imagine the sanitary condition.

In addition to this I know for a fact that girls under fourteen years of age are employed in some of the bakeshops. I would not say they do not need the "dough" but I do know that they work day and night. Our by-laws provide that no man under twenty-one shall work in a bakeshop. By that I mean that we have a standard and will not permit child labor in our organization.

We have no sanitary conditions whatever, in our bakeshops. It is our aim to improve these conditions. We want a place in which to hang our clothes. In Pittsburgh we have cheap gas and this is used in the bakeshops and ovens. The boiler is placed right where the baker works and the baker practically has to take care of it. This is a dangerous thing. That boiler should be taken out of the shop and somebody appointed to take care of it; otherwise, an accident might occur.

Mr. Chairman, the Bakery and Confectionery Workers, International Union of America, No. 4, makes the following recommendations:

1st. That all bake shops and every part therein shall be above the ground.

2nd. That there shall be as many windows as possible, supplying the greatest amount of light during the day.

3rd. For all work done at night, there shall be used no other than electric lights.

4th. All bake shops shall be properly ventilated.

5th. No boilers used in connection with the bake oven shall be in the bake shop.

6th. Every bake shop and all machinery therein shall be inspected at least once in thirty days.

7th. Each bake shop shall have sufficient protection against fire by means of various exits and fire escapes.

8th. Each bake shop shall have a shower bath.

9th. There shall be a dining room separate from the bake shop.

10th. Each bake shop shall be at least ten feet high.

11th. All machinery shall be covered.

12th. Each man shall have a certain space to work in.

13th. Shops shall be thoroughly cleaned each day before work begins.

14th. No flour bags shall be used under the dough; linen towels shall be used instead.

15th. Distilled water for drinking purposes shall be provided for the employes.

16th. Bake shops shall be whitewashed every three months.

17th. In the oven room there shall be nothing except the oven. The work shops shall be in a separate room.

18th. Inspectors shall make a thorough inspection every thirty days.

As I said, the conditions in Pittsburgh are deplorable. I know of a house that has been condemned for sixteen years, and yet today they are baking in it. The room is only about five feet high and you have to bend your head down. They have the habit of cleaning the shops while we are at work and the dust falls into the dough. I know that as a little boy my mother used to bake her own bread. She would not tell us why she did it but I know now why she did.

We want distilled water and not ice water. I feel well because I do not drink ice water. Some of our men drank ice water and it was not long before they had cramps, but one of them just laughed and said he was all right. The man who laughed has been buried for the last five or six years. He developed consumption and his physician said that he would have to quit work. We went to work to try to make a few dollars for him so that he could go to Colorado. He went to a doctor in Pittsburgh who said, "There is no use in that; you are too far gone." It was a pitiful matter when you consider the fact that he had a wife and children to support. We ask that you investigate all of these conditions.

Mr. T. J. Duffy, member of the Ohio Industrial Commission said:

Ladies and Gentlemen: I did not come here with the intention of having anything to say. I came here to learn and not to teach or attempt to teach. In our State, we are entering upon a new plan,—something similar to that which you have in Pennsylvania, except that instead of having a Labor Commissioner at the head of the department, we have a commission composed of three men. We only began our work last month, consequently I am not able to tell you about any great progress that has been made. I came over to attend this meeting and to see what I could learn. I think the problems in Ohio are very much the same as the problems in Pennsylvania. We want to get all the light we can upon the various subjects that

come under the jurisdiction of the industrial commission in order that we can make the commission of the best service to the employers and employes and the public of Ohio. There is only one thought that I might express here and that is this, taking it for granted that this gathering is one of the employers and employes and welfare workers, that we must try to bear in mind that what we want in meetings of this kind, is a frank and candid expression of our opinions upon the various subjects from our different view points, and if, for instance, a laboring man expresses his opinions forcibly and in unpolished language, and with a feeling that might give some the impression that he is possessed with the spirit of a demagogue, we must be tolerant in this respect, and we must try to realize that one of the very things we want to ascertain is just what mental condition has been produced in the individual citizen because of the conditions that he has been compelled to work under. I care not whether it be a University professor of economics—and I am the last man to underestimate the importance of education—or whether it be an employer with many years of experience, you are not going to solve this problem correctly or as near perfectly as human wisdom will permit unless you can come to realize the view-point of the most interested factor, the worker himself. On the other hand, I would say, while it is desirable that the workers in expressing their opinions, should try to take into consideration the view point of the employer, that with the limited opportunities which they have had for education, they are not always able to express themselves just as they would like to do, and that honest, that rugged, that rough, unpolished expression is generally an honest one, and you should get that view point and give some consideration to it. I know on the other side, the difficulties of the employers, and know that it is no easy proposition sometimes to be able to get sufficient amounts of money together on payday to pay the men. I know that he has many things, such as competition, to contend with and which make him at times impatient. I firmly believe, and I have expressed myself before on the same subject, that the one thing which is going to do more than any other thing to bring about a better relation between the employer and employe, is the exercise of patience on the part of both. Out in our own State, we are beginning the same kind of work, as I take it from the papers and discussions given at these meetings, that you are trying to do. You are beginning in this State a new era; the papers that were read here this morning were very interesting to me. They gave me some information and some knowledge that I did not before possess. Not because of the information that they imparted, but because of the inspiration they gave, I believe that one of the best features of gatherings of this kind is the inspiration that results from bringing together people who have different view points on this pro-

position. Let them get together in a free and earnest discussion, and almost invariably they find that they are not nearly as far apart as they thought. They also find, at least it has been my experience, that when employers and employes get together, employers find that the employes are not as unreasonable as they were thought to be. Even though they cannot express their thoughts and ideas in the language of a college graduate, they have minds and they have hearts; they observe; they can feel, and the complaints and grievances they set forth very, very seldom are without foundation. When the employe finds that the employer is endeavoring in a practical way to give relief to that condition, they are always ready to co-operate.

Mr. Chairman, I want to thank you for this opportunity. I regret that I am not able to give you much information, but what I can say is that I am much pleased to have had the opportunity of visiting this meeting, and expect to stay for the remainder of the sessions. Sometime within the next few months, we expect to hold a meeting such as this in the State of Ohio and I hope that I will have the pleasure of meeting some of you there.

Mr. William Shiveley, of the Glass Bottle Blowers' Union, spoke as follows:

Mr. Chairman, Ladies and Gentlemen: We seem to be the only organization that I know of that has machinery by which it is practically impossible to be injured. It is the automatic glass bottle blower. It is practically impossible for one to be injured by the machine and it is not covered in any particular manner. It may seem strange to you that this can be so. That machine works hot molten glass and yet you cannot be injured by that machine. It is simply because the machine does not employ anybody. The machine is purely automatic. I simply make these remarks to tell you of a piece of machinery that is the most complete piece of machinery on God's earth today. The only difference between that and a human machine is that it consumes nothing and has no soul. The machine is purely automatic from beginning to end. All that is necessary for the operation of that machine is to push a button and start it. It will work continuously for twenty-four hours.

The machine that I refer to is known as the Owens Automatic Bottle Blowing Machine. This machine has displaced in our organization forty-five skilled employes and sixty unskilled employes. Each machine displaces 105 employes. Forty-five skilled employes who formerly earned $8 per day have been displaced by that machine. The helpers receive on an average of $1.50 each per day. In one month's time that machine has cost the employes $11,250 in wages, or in ten months, our working season, it costs them $112,500. We have at present 100 of these machines in operation. We believe in

operating machinery and if the machine is good we are going to operate it. There have been others machines since the Owens machine which are semi-automatic and they displace one man. The machine has been instrumental in putting wares on the market at a terrific rate. To give you an idea of the amount of work done by one of these machines, each of them produce thirty-six one pint bottles every minute, by actual count. It can produce 500 gross of bottles of the four ounce capacity in twenty-four hours and the best that three skilled workmen can do is to produce thirty gross in 8½ hours.

We do not attempt to underestimate the value of that machine, but we do attempt to protect ourselves against such a machine. Only certain manufacturers can get this machine. There are 135 plants in the United States and Canada who manufacture glass and they employ 10,000 skilled workmen. We reduced our list and to our best understanding there has not been an automatic machine ordered within the past year. I make this statement to you to show what the possibility of the automatic machine is. I don't mean to say that it is right for this convention, or any other convention, to attempt to destroy machinery in itself. We should recognize the fact that machinery is a great benefit to all mankind, but I must say to you that the bottles made on this machine are far below the standard of bottles made by the process of hand. We do not want to destroy a man's business and we do not want to destroy his industry. It is not our idea to do so, but in my mind a machine that displaces 105 men and destroys the producing power of those men certainly cannot be looked upon as anything else but a menace to those 105 men. Automatic machinery that does not employ anybody in its operation seems to me to be a direct menace to labor. I simply make this suggestion to bring to your notice one of the finest pieces of machinery ever put together. It makes a bottle that is uniform in weight, uniform in capacity, uniform in length and uniform in everything but durability. If that machine could produce durability the glass bottle blowers' association would be eliminated in thirty days. The only thing that keeps the glass blowers together is that the machine does not produce quality. We do not ask legislation against any machine of that kind, but it is worthy of your thought and notice to know that a machine of that kind is in existence.

Mr. David Ross, of Springfield, Ill., spoke as follows:

Mr. Chairman, Ladies and Gentlemen: Commissioner Duffy has called attention to the importance of the viewpoint and it is important. It is quite important that we should understand and appreciate the situation of the other fellow. That reminds me of the gentleman who complained to the small boy that his little baby brother, of whom the child was very fond, did a great deal of crying. The

little chap answered, "I don't know that he cries so very much. If your hair was all off; your teeth all out and your legs so weak that you could not walk on them, I guess you would cry too."

I was interested very much in the discussion of our glass bottle blower friend, who had some very interesting things to say about automatic machinery and the manner in which labor is being displaced. This is the age of machinery and that displacement is going to continue. I observed in the report of a convention held in New York a few weeks ago that the introduction of machinery on the farm had in the last few years displaced ten out of every fourteen men. Now, the agriculturists whose jobs have been lost in that manner might feel a personal reason for objecting to the introduction of the machine just as the individual bottle blower or the individual coal miner might regard the temporary loss of his employment through the machine. I can appreciate the personal reason for the feeling in this matter, but it is not a personal question. It is largely an economic question. It is one of the phases, and one of the important phases of our industrial development, and personally, my own, individual opinion is that the more machines that come the better it will be. I know as a matter of individual experience that when I was following a very hazardous occupation I hoped that they would get a machine to take my place. I felt then, as I do now, that while there may be some displacement and some temporary inconvenience, ultimately the result is good and will be better for all mankind. I was looking over your census and I find that you have 27,000 manufacturing establishments in the State of Pennsylvania. You are one of the great manufacturing States of the Union, and I was thinking what a job Commissioner Jackson and his Board have with their limited help. I believe the number of inspectors under your law is limited to some fifty people, divided into several districts. I was just wondering at the enormous task the State, with its limited appropriation, has set for your new Commissioner, and it is hardly to be wondered at, that our friend on the other side of the hall should call attention to the conditions in the bake shop industry, and it is not to be wondered at that an inspector was found two years ago who did not know all of the laws that relate to factory inspection or industrial operation. We have, I presume, in the neighborhood of eight million men engaged in manufacturing plants in the United States, who, if assembled together would fill a territorial space equal to the entire State of Pennsylvania, and the product of those mills, measured in dollars and cents, is more than twenty billions of dollars.

Another thought that comes to me is that it ought not to be necessary, in order to maintain our industrial supremacy, to populate graveyards, and here is the other important thought in connection with this Conference. We must not forget the need of education and

of creating a feeling of sympathy and of complete co-operation, between all the factors of production, which will make it possible to produce more wealth and to do it more safely and at the expense of less lives and limbs. Unless we can do that, unless we can demonstrate, Mr. Chairman, and show by actual results, a very material reduction in the volume of industrial casualities; unless we can make more safe the operation of industrial business, then much of the time and agitation with relation to workmen's compensation, and other similar things, has been lost. It is an issue of human life, and I was much inpressed by the pictures of the ballground and the schoolground and of the little children at play, cast upon this screen. I am gratified that none of our experts were bold enough to suggest that much of that energy was lost and could be better utilized in work. It is the human element that is coming more and more into this proposition. The economic side of it is but one phase of it, and I feel that your Department of Labor and Industry, your safety experts and the other men who are engaged in this humanitarian and great economical work are doing a great service. I believe that we are just on the threshhold of a greater and mightier wealth and that now is the time when public sentiment and public sympathy is with you in this work. It is my firm belief that the results to be accomplished in the immediate future will warrant all the time and all the money and all the energy that you are expending in this enterprise.

Mr. William Shiveley spoke as follows:

Mr. Chairman: I would like to say one or two words at this time, and to reply to a few things Mr. Ross has said in reference to automatic machinery. I mean what I said a few moments ago concerning automatic machinery and I am going to reiterate my statement. If the machine is going to produce everything, I wish to ask you, in the name of all that is fair and honest, who is going to take care of the men that the machine displaces? We want to work and not to be sent to some home and to be objects of charity. We want to be given the privilege of living in peace and the happiness that we are guaranteed under the constitution of this United States. I say that the man who labors has the right to contest the operation of that machine as far as it goes into private monopoly, and displaces labor on account of its automatic action and I say that I am not a Socialist.

Hon. A. L. Urich, Commissioner of Labor, Iowa, said:

Mr. Chairman, Ladies and Gentlemen of the Conference: I have probably travelled farther to attend this conference than any other man present. Many of you, no doubt, might wonder why Iowa, generally listed as an agricultural State, should be interested in the prevention of accidents, and in the promotion of manufacturing in-

dustries generally. I am here, however, because of our growing manufacturing industries in the State of Iowa. And it may surprise some of you to know that notwithstanding the fact that Iowa raises from three hundred to four hundred million bushels of corn, approximately two hundred million bushels of oats and some fifteen or sixteen million bushels of barley a year, yet with this enormous crop of cereals, the manufactured products of the State today exceed our cereals in value by approximately fifty million dollars per year. You can therefore see that we are interested.

Last Thursday afternoon, the Governor of the State called me into his office and asked me whether I could attend this conference. Believing that Iowa was desirous of promoting all of its industries and the solving of such problems as have come before this conference, I gladly accepted the opportunity of coming and I want to say now that I have appreciated every moment of my attendance during yesterday's and today's sessions. I have so far absorbed much good with which I am going to return to the State of Iowa for the purpose of inaugurating there, greater and better policies for the protection and safeguarding of the men and women in the factories of that State. We have for several years been attempting to work along the lines of all departments of labor. We have probably not accomplished all that many of the older States have accomplished. I have heard Mr. Ross of Illinois make the statement that your department has fifty inspectors. In the State of Iowa, it may surprise you to know that the entire department consists of a commissioner, a deputy, two male factory inspectors, one female inspector and one clerk of the department, yet we have all told 5,528 manufacturing plants. In addition thereto, it is our duty to look after the fire escapes of all the buildings of the State. It is our business to inspect and examine conditions in all of the department stores, laundries and other similar establishments, so you can readily see that it keeps us hopping to get around. I have been commissioner for nearly seven months. With the limited force, we have covered two thousand plants. We have made a great number of recommendations, and I am glad to say to you that they are quite readily complied with.

Of course, in common with all States, we have some few that are continually desirous of keeping on in the way which appeals to them as being the most economical, even though it may be the most costly in the end. However, where a few years ago an inspector almost had to force his way by the doors of a factory, or workshop, to-day in 90% of the places he is welcome. We have calls today from manufacturing establishments who desire and invite inspection. Much of this, has, of course, been brought about through the passage of a Workmen's Compensation Law which will go into effect July 1st of next year. Since July 4th, we have had a compulsory reporting of

accidents. The recently appointed industrial commissioner is to enforce the law and co-operate with me in gathering these statistics. We want to gather them in such a way that they will mean something.

In speaking today with Mr. Hoffman of the Prudential Life Insurance Company, I told him of one plant employing some three hundred people, having grinder accidents averaging one per day. Through the means of our department, we sent an inspector to that place, and during the last six weeks, we have never had more than two a week, and the majority of weeks only one trifling accident from the same cause, showing you that we are trying to do something along the line that you are doing here, and that the other States are doing. I was much interested this morning in the discussion on conciliation. Iowa too has a conciliation law, but it works somewhat differently. It is decidedly different from that of most other States. What we are attempting to do in our conciliation, is to make a forced investigation, whether they want to be investigated or not, believing with the facts make known to the public, through publication in the newspaper of the community in which the trouble exists, that the public, having a proper knowledge of the condition, will very soon bring the necessary pressure to bear to produce greater peace in our industrial affairs. I am not going to worry you any longer at this time. I may sometime during the balance of your sessions tell you a little more of what we are trying to do in Iowa. Another thing, however, before I conclude, and for fear I may not have anything more to say to you engineers, who are here. Iowa has one of the greatest engineering works from a power producing standpoint in the continent. It is a great dam stretched across the Mississippi for more than a mile, supplying approximately two hundred thousand horse power for the purpose of driving machinery and furnishing power. You hear a great deal about the Gatun Locks of the Panama Canal. The lock of the dam built by Stone and Webster across the Mississippi is the exact size of the Gatun Lock. This will give you an idea of the immensity of the work. You will agree with me that a construction of that kind will enable Iowa to take its proper place in line with the great manufacturing States of the Union. I thank you for this opportunity and I am glad to be with you.

Mr. Israel Levitsky, of the Union Label Trades Union, of Philadelphia, spoke as follows:

Mr. Chairman, Ladies and Gentlemen: I would like to call your attention to the fact that unorganized labor has no representatives here today, and I hope they will never have any as long as they stay unorganized. I represent the Label Trades Union, of Philadelphia, an organization that has within its fold about 20,000 working men

who advocate the Union label on the goods they produce. The Union label signifies many things which we have been talking about, such as the question of sanitation. Wherever the men have organized they have secured sanitary conditions to the best of their ability. They want safety appliances wherever they can get them; they want sanitary homes, which they can have if they get better wages, they want their children well raised. They get better wages if they are organized and they can *be* organized if they wish to.

Of course, as we are a gathering of employers and employes, it would appear to an outsider that the employer has just as much interest in the sanitary condition of the factory and in the safety conditions for his factory, and just as much interest in the homes of the men who work for him, in the education of their children. If Commissioner Jackson has undertaken the betterment of working conditions and is successful he will have accomplished a great deal for the Commonwealth of Pennsylvania. The question, it seems to me, is to bring about a better relationship between the employer and the employe. Now, that brings me back to the question of organization. I believe that the working men in this State and every other State and every other country are ready to be the friend of the employer. They are always ready to be the friend of the employer. No matter how dumb an animal may be, he knows what is good for him. He knows how much he needs for food; how much he needs for clothing; he knows that it is a good thing for his children to have an education, a thing which the poor old father did not have. When his daughter arrives at an age when she sees the value of education he has to put her in the factory. Suppose one of us would approach the employer and say, "I have been working for you a long time and you know that economic conditions make you and me brothers, because I need you and you need me, and it is a great thing. I want a good home; I want a chance to raise my children and give them a good education." What does the employer say? He will be just charitable enough to call for the patrol wagon. That is just how charitable he will be unless the men have had sense enough to organize into one solid body, and then the employer will begin to realize that he must do certain things which he should have done long ago.

Commissioner Jackson: I said this morning, and I wish to repeat it now, that we are here to discuss without antagonism the things that affect us at the present. We are not here to antagonize each other and we must have self-restraint. Everyone of us, whether we be officials, whether we be employes, or whether we be employers, should hold ourselves in that restraint which is essential to the success of this meeting.

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Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

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1914

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

Richard M. Pennock is Chief of the Division of Accident Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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SAFETY FIRST IN EUROPE.*

Considering the high purposes for which you are gathered here, you will pardon me, I trust, if I digress a moment from the subject assigned me. I do this for the purpose of inviting you to attend the second annual safety welfare and efficiency conference to be held in Pennsylvania, at the State Capital in Harrisburg, on November 17th, 18th and 19th of this year. This conference is held under the auspices of the Pennsylvania Department of Labor and Industry with the aid of the Pennsylvania Engineer's Society. The first conference last fall was productive of much good and was attended by approximately two thousand persons, most of whom represented important labor and industrial interests in the Commonwealth. In connection with the conference is an unusually perfect exposition of safety and welfare appliance and other similar exhibits installed by manufacturers and others interested, in a large hall in the city.

This conference, even more than the one last year, will undoubtedly prove to be an important influence in promoting sane and reasonable safety and welfare practice and in improving the avenues leading to industrial prosperity.

You are not only invited but urged to come and lend a hand in this great work. You should do this, not only for the intrinsic value of the service, but also as a measure of brotherly reciprocal helpfulness, since, during the past year, Pennsylvania has pre-eminently promoted within her borders the purposes and plans of this great council before which I stand.

Before starting to Europe as a delegate to some of the great labor welfare conventions which were to have been held this summer and to study the English, German and French development in labor legislation and practices, I obtained various letters of introduction. Among these was a letter from Governor Tener of Pennsylvania, who spoke at the last annual Conference of the National Council for Industrial Safety and who has shown large interest in the promotion of industrial welfare; another from Dr. F. D. Patterson of Philadelphia, one of the National Council's most competent and effective members; another from Dr. John B. Andrews, Secretary of the National Association for Labor Legislation; and others. These letters proved of valuable service and I desire to take this first public opportunity to make my sincere acknowledgements to those who rendered me the favors. I wish also to express my warm appreciation of the activities of the J. G. Brill Company in my behalf, extended at much cost in time and money.

*Address presented before National Council for Industrial Safety, Chicago, Ill., October, 1914, by Commissioner John Price Jackson.

My party left New York on July 21st and arrived in Rotterdam on the 31st of July. From that city we proceeded direct to Berlin, arriving there in the early morning of August 1st. It was six o'clock in the afternoon of this day that the Kaiser's ultimatums to France and Russia expired without reply from these powers. As a result, the orders for moblization of the German troops went into effect. This being the case, I may be pardoned for saying a word or two about the magnificent "unguarded," military machine which we saw and for exhibiting a little of the evidence which we gathered with reference to the subject of war and war preparation as it relates to human "safety first." Having been in Berlin a couple of days, our party proceeded to Dresden where we were marooned by reason of the moblization. This moblization presented to view the most perfect organization of enormous masses of men, which it will probably ever be my opportunity to see. The recruits came in through the many railway stations in the city, usually in companies of about two hundred. They ordinarily passed directly to the arsenal where each man at once found at hand his complete uniform and accouterments, and his implements of war and ammunition. Having been equipped in the course of a very short time, he was either assigned to a residence in the town or transported directly to other points with his organization. Though the town was filled with tens of thousands of these forces and though they were apparently permitted much freedom to pass where they would, there was absolutely no disorder on their part. Indeed, a more quiet, self-controlled set of men could not be imagined. The people themselves, naturally were quite excited and frequently gathered in large groups. Though there was more or less noise and applauding, I detected practically no misconduct. The cooking wagons to accompany the army were most perfect, as were the supply trains and other requirements for provisioning and clothing the soldiers. Apparently all horses and automobiles in the Empire had been registered and their whereabouts known, for they were gathered in as needed without disturbance, and apparently with great promptness. It is interesting to note that in Germany the people are commanded to receive soldiers in their homes, to give up their horses and automobiles, and perform other duties—but they are well paid, and appear glad to be of service to the Fatherland. Likewise, citizens are commanded to join the army—though, of those not officially called, great numbers volunteered. Within a few days the reserves had been collected and sent to the front from over the whole empire, constituting a complete, well-organized, well-trained army to be counted in millions. The railroad schedules had been worked out in such a way that the enormous army, with its still more enormous trains of supplies and artillery were transported,

so far as I could learn, without hitch, though the burden on the transportation system was terrific.

This great human machine, worked out in such perfection in all details, represents today an awful agency for human destruction, such as the world has never before seen. The most curious phase of the whole phenomenon is that this devilish agency of destruction has been created by the peoples who, possibly more than those of any other nation in the world, have advanced their practices and methods for alleviating suffering and injury among themselves—particularly among those who work with their hands. Above I have spoken of the mobilization for the purpose of emphasizing the irresistable conclusion drawn from what we heard and saw, that such "preparedness for war" is the greatest possible incentive to war. The large number of officers which are permanently employed to man such an army, and its reserves as is to be found in Germany and some other nations in times of peace, forms a pro-war nucleus of the most difficult type to restrain. These officers are inclined to look forward to war in times of peace and preach the strongest possible arguments at their command in favor of war. As a result, when two nations have a difference, instead of endeavoring, in a sensible, humane way, to settle the trouble, the military officers tend to encourage and preach settlement by force. Indeed, the two nations become like a couple of boys with "chips on their shoulders." May this war be such a lesson to us that our "jingoes" may be reduced to silence and that we, as a nation may confine our warlike preparations to the very least that is reasonably necessary for defense and to the performance of our part of the international police duties.

In Berlin we visited the magnificent Museum of Safety, given to the Empire largely by the Kaiser. This museum is probably the finest in the world and has some points of interest worthy of mention. Thus, it contains most of the tools used in industry, set up so that they can be operated, and arranged with the best types of guards. These guards, I might add, are, as a whole, much in accord with the best practices in the United States. The use of models for illustrating methods and practices is also quite interesting. One of the large models dealing with proper methods of scaffolding is particularly noteworthy and shows right and wrong methods of making such structures. I noted throughout the Empire that the scaffolding used in practice is, as a rule, excellent—the platforms are guarded by rails and the supports are strong and trustworthy. Full-sized models show safe methods of mining and mine blasting. Right and wrong ways of using elevators, cranes, tackles, etc., are illustrated by standard equipments completely installed for service. Many hygienic models exhibit the effects of injury and dangerous practices to the

health or limb. Sanitary appliances in the nature of wash-rooms, toilets, etc., in shops are given large space.

The agricultural machinery exhibited particularly struck our notice. This machinery includes the barbarous feed-cutter, thrasher, traction engine, and the various other machines required on the farm, properly guarded to reduce accidents to a minimum. The accidents in our country on the farms are undoubtedly far greater than is known to be the case from statistics, by reason of the fact that apparently but a small percentage of such accidents are reported to the authorities and because it is difficult to enforce the reporting of accidents by individual farmers. Evidence of the truthfulness of my supposition, however, is to be found by visiting our rural villages and making an investigation of the number of injuries that have occurred through unprotected farm machinery in the surrounding country.

Another interesting phase of the exhibit is contained in the large area given to models and plans of practically and artistically designed workmen's houses, as well as of the living appliances, such as furniture, stoves, etc., which might be properly contained therein. In England there is strong opposition to spending large sums of money on a great central safety museum, as it is contended that such institutions are but little used by those who should have the information contained therein. There, those in authority, prefer to use small exhibits—preferably portable—such as are now being circulated in Pennsylvania.

While there was difficulty in entering the industrial plants in both England and Germany, through the letters I carried and the intervention of influential officials, I was enabled to obtain admittance to a number. Indeed, in England I had a factory inspector assigned to me for this purpose through the courtesy of Sir Arthur Whiteley, the head of the Inspection Department. We found in the machine shops, wherever we went, a quite full observance of the regulations to guard gear wheels, belts, holes, stairways, couplings, shafts, etc. Apparently the manufacturers of both countries have accepted the methods laid out by the government regulations as proper and as part of the regular procedure of their establishments. I noted in the "fencing" of belts which ran over pulleys near to floors that the guards are usually made of heavy wire mesh about three and one-half feet high, in the form of two contiguous sides of a rectangular enclosure. These angular guards, as a rule, are not fastened to the floor and in a number of cases we noticed that they had been displaced. We found that the practice with reference to industrial sanitation and hygiene is well advanced and equal to the best in this country, while the danger signs, safety and health bulletins, and other safety first educational methods are effective and commendable.

Another interesting item which we noticed was that the government safety and health rules and regulations are so drawn that the inspectors can use good judgment and sense in their application. For instance, if a belt passes near the floor but is not in a location which causes danger to employees a guard is not required. This sensible construction and application of rules and regulations appears throughout the industries and represents a broad-guage policy of guarding which can, to excellent advantage, be followed in this country. I make this statement by reason of the fact that I have been in establishments in the United States where guards have been installed which were not needed, merely because the regulations seemed to require them. A pointed lesson is to be found here, namely, that factory inspectors be so thoroughly trained that they may be given safely generous latitude in applying official rules and regulations to fit the conditions in hand. We were particularly struck by the intelligence and efficiency of the English inspectors who are, I understand, in every case not only experienced in industry but are also holders of collegiate degrees. This latter qualification is not required for appointment, nor should it be so considered,—especially in a republic. It occurred as a result of the civil service examination in England. We also noted that inspectors are given a thorough training, extending in some cases over several years, before being assigned to independent territory. There is in this country a not uncommon notion that any man, who has been a good mechanic in a factory, can serve as a factory inspector without reference to his scientific attainments or special fitness. The countries that have been at this work for many years, like England which has had a fully established department of factory inspection for a quarter of a century, have long ago learned the necessity of having only the best men of wide experience and technical training in their inspection forces.

The next item of "safety first" to the industrial workers which appealed to us was the housing problem. In Germany this has been attacked by means of carefully organized and efficient city planning. The streets of the rapidly growing cities have been laid out in such a way as to make transportation between residence and factory as economical in time and money as possible. This system of transportation, however, has not only been confined to the city but has extended many miles into the suburban districts; so that the working man may have his house and garden a long distance away from his work without either a great burden upon his pocketbook or his time. The factories of the cities are confined to proper limits so that they do not encroach upon and injure the comfort and healthfulness of the resident districts. In like manner, to a large extent, are the commercial activities confined, and the same methods are applied not only

to the city but also to the suburbs and the small towns. We traveled all over the cities of Dresden and Berlin and also into the manufacturing suburbs for the purpose of finding the slums and rows of unhealthful "shacks" which are so much in evidence in some other countries. Much to our surprise these were not in evidence, nor could we find them. The industrial workers' streets in the city of Berlin, like other streets, are wide and built up with artistics houses, fronted by balconies filled with flowers and, while we were there, decorated profusely with German and Austrian flags. I have been told, though I was unable to determine fully upon this, that there is more or less overcrowding in some of these very good looking dwellings, but they are well lighted and the conditions are not seriously bad, as a rule. Another feature which is deserving of criticism is the placing of large numbers of small factories in the central yards of many of the blocks of houses, thus cutting out the possibility of using the space for the customary, beautiful German gardens and playgrounds, and depriving the children, living around the edge of the blocks, of much happiness and possibly health. A material part of German industry is carried on in the homes and makes possible conditions that more or less approximate our sweat-shops, though I understand that the thoroughness of inspection reduces this to a minimum. The wages obtained by the home-workers,—as well as those obtained in the factories,—are exceedingly low when compared with those in the United States, and undoubtedly add a tendency toward unsatisfactory conditions, in spite of the lower cost of European living.

Before leaving the subject of housing, it is worth while to mention the fact that building construction in both Germany and England is, on the average, of a much more fire-resistant character than in this country. In special arrangements for fire exits, etc., it is possible that some of our states have made greater advances, but this is more than counter-balanced by the better construction of buildings in these foreign countries and the greater thoroughness with which waste and inflammable materials are cared for. In short, Germany and England are far advanced over us in both building construction and fire prevention housekeeping.

In studying playgrounds for the industrial workers' children, we went through thoroughly the extensive playgrounds in the Dresden forest for the working children of that city. The part of this forest devoted to playgrounds is largely divided up into plots of a few acres. Each of these plots is assigned to a couple of hundred children who are placed under the direction of one of their fellows as captain. This captain, for his extra responsibilities, is assigned in the enclosure a small plot which he may cultivate as a garden and from which derive such income and pleasure as is possible. In his plot

he also has a small house in which he keeps his tools and to which he may retire or take others of the children. Such plots are also given as rewards of merit to other deserving children. There is a small hospital in the playgrounds which forms a center where a few nurses and caretakers stay and there is also a restaurant which furnishes lunches at a surprisingly low cost. Some four or five thousand children are to be found in the grounds every day. It is interesting to note that these playgrounds are kept up and maintained by a voluntary organization of people of the city, largely the working people with children. The city does not give anything towards the maintenance and even demands a moderate rental for the use of that part of its forests. In addition to this great playground, the numerous parks and open spaces scattered throughout the city contain small tracts, sand piles, etc., in which the children are permitted to play. One of the most interesting phases of all of these playgrounds and garden plots is the fact that they are very pleasant, filled as they are with luxuriant shrubbery, flowers, and trees. The main playgrounds contain many devices for juvenile entertainment, and the children are given such instruction as is possible for learning games of an interesting and proper character.

Among the valuable welfare and health safety subjects in Germany is the system of garden plots for the industrial workers, laid out in the outskirts of the towns. Great stretches of land are divided up into small plots and these are assigned to people who desire to use them. In most cases, those having plots build small inexpensive cabins on them for holding their tools, etc., and in many cases for use as summer residences or picnic houses where they can spend a night or two in the comforts of country air and life. These large additions of garden plots are a common and, by reason of the flowers they contain, frequently a beautiful sight around the cities of Germany and must prove a great accelerator of health and happiness to the city people.

Much of our time was spent, both in England and Germany, in studying methods of reduction of suffering caused by the unemployment resulting from such causes as accidents, sickness, permanent invalidism, enforced unemployment, strikes, etc. We found that the compensation for accidents, where the employer bears the burden, is not only a thoroughly established policy, but is accepted as a matter of course by the manufacturers and other employers of these two countries. In Germany, the compensation system for accidents holds responsible all employers and does not, as is so often the case in our States, exclude those in agricultural and domestic pursuits. Indeed, a private householder may not only become liable for damage to his or her employees in the kitchen and elsewhere, but may be similarly

held for injury to others who enter his house temporarily as guests or on business. In England, the compensation insurance business is carried on by private companies. Unluckily this is done in such a way that there is small incentive given through it to employers of labor to install safeguards—slight modifications would rectify this weakness. We found compulsory sickness insurance quite fully developed for the purpose of protecting these who have to leave their work for short periods by reason of physical ailments. The only persons who are required to be insured are those who receive less than a certain minimum annual income—these comprise for the most part industrial workers, clerks, etc. There is also the permanent invalid and old age insurance which is managed and handled in a way much similar to that of the sickness insurance, differing mainly in the fact that here the government obligates itself to greater financial responsibilities. A lack of time will prevent my going into these welfare methods of insurance, though they represent important practices with reference to dealing with those having small wage or who are unable to work. The President of the department concerned of the German Empire, in talking of the subject of these several insurances, gave it as his opinion that our country should follow in the same lines only after careful experiment and study, as he believed that the dissimilar conditions existing here might be injurious. He intimated that the adoption of so much governmental protection would have a tendency to weaken the present independent spirit and rugged self-helpfulness of our citizens. His words could be construed as a warning to us to stear clear of paternalism in governmental channels.

In Dresden, we examined in quite full detail the unemployment office of which, in both England and Germany, there are examples in all industrial centers, so arranged as to cover the entire territory of the countries. The Dresden unemployment bureau occupies a long building having about a dozen doors opening upon the street. These doors lead to waiting rooms which are occupied by classified applicants for positions. Thus, one room is reserved for skilled mechanics, another for unskilled workmen, another for hotel service, etc., etc. To the rear of the waiting rooms is a string of registering offices connected with the former by desk windows and doors. The clerks at the windows hand the applicants cards which they fill out with their names and addresses, the kind of work they desire, their past positions and such other information as may be required. These cards are then properly filed. Another set of offices keeps in touch with employers. When an employer needs men, the registration files are gone over and he is sent such workmen as seem best adapted to his purposes. There is not apparently, in these offices, a very thorough system for determining the character and efficiency of the workmen,

but as a whole they seem to be excellently arranged and operated. The annual report of the Dresden office shows a large number of persons furnished with work at a very small cost per person. The various state employment offices in Germany are in close contact with the individual city offices and all again are allied with the central office in Berlin.

In England we found a similar system of effective unemployment offices, but here they are carried on in connection with a system of "unemployment insurance" which now extends over a number of the principal trades of the United Kingdom. This unemployment insurance has been in effect only a few years but the officials and industrialists with whom we talked believe that it contains elements of much value to industry. The insurance premiums are paid by the employer and the employee, jointly, and the executive work involved is carried on, as far as possible, in co-operation with the labor unions, which in many cases act as distributing agencies. Complex and difficult problems are encountered in the management of this activity.

We found in England, then, that those receiving an annual income of less than a certain amount, in many lines of endeavor, are assured of support in case of accident, temporary sickness, permanent invalidism, old age or lack of work. It might be well to add that the unemployment insurance is not paid in cases arising through labor differences and also that the unemployment bureaus are so organized as to be incapable of influencing either one or the other side of a labor controversy. This is an important point. It also might be worth noting that if a person without work is offered a position for which he is qualified by the unemployment bureau and refuses it, his insurance benefits cease. In addition to the unemployment welfare movements above enumerated, both England and Germany are making endeavors to use the public works as a means for providing labor for those in enforced idleness, and in Germany, in particular, there are a surprising number of welfare organizations, covering a wide range of human conditions which are either entirely voluntary or are partially official. These organizations are enough subject to governmental control as to ensure their working in fairly satisfactory harmony one with another. It is worth while to add at this point, that we found the hospital and sanitarium effectively correlated with these various welfare movements, which we have been discussing. Methods of arbitration of labor disputes, though developed to some extent in the European countries visited have seemingly not as yet extended as far as may be found in some other places. They are, however, gaining ground.

Another great phase of human conservation is to be found in the continuation schools, those of Germany being particularly worthy

of notice. We spent several days in the schools of Berlin and found them to be quite fully organized and accepted as a regular branch of the German school system. Here young men and women, who must go to work at fourteen,—fourteen being the minimum of child employment,—are compelled to attend a practical school six hours in the week for a period of three years. The schools are so arranged that those who are pursuing similar vocations or apprenticeships are drawn together, and the teaching is especially designed for increasing their capability in their chosen fields of labor. Thus the locksmiths are taught a great deal about the tools of the trade and about the materials of construction, such as iron, steel, brass, bronze, etc. This teaching is done in a most simple, clear and systematic manner. Usually the instructor stands before the class and talks to his pupils about the subject in hand. After this, the pupils are expected to write careful papers telling what they have learned. This latter exercise not only cements their knowledge of the subject but is an excellent form of practical training in writing the mother language intelligently and usefully. The pupils are given about one-third of their time in this kind of direct practical application. The other two-thirds of their time are devoted to teaching them arithmetic applied directly to their life work; German of a like practical character; simple business principles; information concerning the social, labor and other similar laws of their city, state and Empire; and instruction in the humanities, such as the proper attitude to display toward the employer, and fellow employees, the discipline of the industrial workroom in which they labor, methods of caring for their health, saving their earnings, etc., etc. The directors of these schools, with whom we talked, speak in the most enthusiastic manner of the improvement which is gained thereby to the young men and women who attend. I believe there is no single phase of activity so much needed in this country as the rapid establishment of similar continuation schools. Along with the compulsory day continuation schools, are also carried on voluntary day and evening classes for any person desiring to attend. The enrollment of these voluntary schools is quite large.

Naturally as we went through our summer's studies and explorations, we found various items which did not fully meet with our approval. For instance, we found a tendency, in Germany, to what is sometimes considered over organized bureaucracy. Thus, in the work of sickness insurance for the city of Berlin, the number of state or city employees for carrying on the various phases of the work is apparently much greater than seems to be wise. Indeed, to a layman, the whole subject of cost of government rated in numbers of employees, seems to be excessive and to be a serious drain

upon the resources of the country. In the development of our American national and state governments the numbers of employees are becoming rapidly greater and will, if great care is not exercised, tend to reach the same apparently unsatisfactory condition here as in the country just mentioned. My own opinion is that all welfare, equally with all similar government activities, so far as possible, should be carried on by local communities, with the state or United States, as the case may be, taking the position rather of an advisor, having full power to compel proper performance where the local community is not capable or rightly inclined. This policy tends to reduce the weakening effects of paternalism to a minimum and encourage the growth of local pride and competency. We also found in Germany a disregard for life and limb in the streets which to an American is quite incomprehensible, in spite of our own shortcomings. The traffic apparently has first right and the individual must look out for himself. With large numbers of automobiles, street cars, busses, etc., in the streets, this requires, in some cases, the agility of an acrobat. The street cars, themselves, in many places have no air-brakes and stop and start in a most unexpected manner. The cars and busses have no safety vestibule doors and it is a quite common sight to see many people jumping on and off such vehicles while they are moving. Indeed, one of the most interesting sights of our trip was the grace and agility with which women boarded and alighted from street cars in more less rapid motion. The freight trains of the Empire, to a large extent, also lack air-brakes and automatic couplings. The bumpers of these cars are made long so that a man is not apt to be squeezed who is making a coupling, unless he gets a shoulder, arm or head between the bumpers or is knocked over by the train starting. Whatever the statistics may show, there must be serious danger of accidents in the streets and on the railways of some of the foreign countries, by reason of these comparatively primitive methods. These dangers are somewhat lessened, comparatively, however, by reason of the fact that the American "speed mania" does not seem to have crossed the Atlantic. Though it is generally understood that people do not stand, to any extent, in the street cars and busses of Germany,—the rule being in some cases that two or three people may stand outside,—nevertheless the car platforms are made very large and people are permitted to crowd in quite large numbers upon them. We found it necessary to stand more during our foreign trip than is usually our experience in this country. This may, to some extent have been due to the disturbed condition of affairs on account of the war, though careful inquiries did not indicate such to be the case. By these comparative criticisms, I do not mean to indicate in the least that we should reduce, in any

way, an energetic movement to further advance our own methods of safety, both in the street and on the railroad, but rather for the purpose of indicating "how not to do it."

In both England and Germany, the woman and child is protected along the line of our more advanced legislation in the United States. The protection of the child extends not only to the housed trades but also includes the street trades. Moreover, the continuation school form is a break in the weekly labor of the child and a stimulus to his mind that not only makes him more competent mentally, but undoubtedly aids in his physical development. One of the interesting phases of the street trades in European countries is the absence of small boys selling papers and the presence, in their place, of men and women of all ages. In the legislation of these countries, dealing with hours and conditions of labor, apparently the various official boards of control have more latitude than is given in this country, so that the laws can, in many cases, be applied with greater helpfulness to specific conditions.

Taken all in all, my party had a unique experience in its unusual opportunity to observe in the countries visited, on one hand the most perfect piece of human machinery for the destruction of the human being, and on the other hand, to see the working of rapidly perfecting and magnificent systems for the promotion of human welfare, health and safety. The evidence we gathered indicates clearly that in America we can see and take much of value from the good works that are being promoted by our sister countries in Europe, while at the same time these countries have laid before us as a nation striking lessons which should be as danger signals directing us away from imperialistic, military and paternalistic paths which lead only to human suffering and destruction.

In closing I must add that our party was treated with the utmost courtesy, consideration and helpfulness by the officials and people with whom we came in contact while on our journey, and though they have our cordial and sincere thanks, we are deeply in their debt for the generous labor and sacrifices they devoted to our well being and to forwarding the work we were engaged in; but nevertheless, in spite of the many good, new friends whom we left behind, I must admit that when we placed our feet upon the American Continent, in the latter part of September, it was with a deep feeling of patriotism and great joy in the thought that we were home again among our own people.

CO-OPERATIVE BOILER INSPECTION.*

BYRON S. CUMMINGS,
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Several months ago Dr. Jackson, your worthy Commissioner of Labor and Industry, requested that we prepare a paper on the care, attention and safe operation of steam boilers, to be delivered before a gathering of the State factory inspectors to be held for the purpose of discussing accident prevention and improved methods of sanitation.

This enthusiastic convention is the gathering of inspectors to which he referred. I have attended many similar conventions but have never attended a better one. As a native Pennsylvanian, I am very proud of it.

You have heard during the progress of the Convention, excellent addresses and much good advice in reference to the prevention of accidents in a large variety of manufacturing, railway, mining and contracting operations, but until to-day very little has been said in reference to the prevention of boiler accidents. This is due in a measure to the fact that the regular and complete inspection of steam boilers does not properly come under the care of the factory inspector. However, in view of the fact that every year there are from 1,200 to 1,500 serious boiler accidents in the United States, entailing the loss of hundreds of lives and serious injury to many others, we believe that measures for the prevention of boiler accidents should have the careful attention of every factory inspector.

The question of the inspection of boilers in your State, should be considered under three classes on account of the laws under which the inspections are made. The City of Philadelphia is operating under a law passed in 1864; the County of Allegheny is operating under a different law and the remainder of the State is operating under the Factory Inspection Laws of Pennsylvania, which provide that all boilers used for generating steam or heat in any establishment shall be inspected once annually. This does not apply to boilers inspected under local laws. Inspections may be made by an inspector approved by the State Department of Labor and Industry, or by a casualty company that is insuring the boilers. It is not to be assumed that the annual inspection referred to is to be all of the care that the Department is to devote to the inspection and operating of steam boilers. If this were the

*Part of the proceedings of the First Pennsylvania Welfare and Efficiency Conference held in Harrisburg, October, 1913.

case, the only supervision of the operation of steam boilers would be that given during an inspection requiring a few hours' time once each year. The factory inspection laws require that a boiler owner must file a certificate in the office of such establishment showing the condition of the boiler. This certificate will of course show the condition only at the time of the inspection. In our opinion the proper enforcement of the law will require that factory inspectors inquire into the conditions with reference to the care and attention of boilers as a part of their regular inspection work, for the reason that no matter how good the condition of a boiler may be at the time of the annual inspection, serious accidents may occur, and very many serious accidents do occur, on account of improper care in the operation of boilers.

In this connection we wish to call the attention of the factory inspectors to some of the conditions that it would be well for them to observe during their regular inspection. It is understood that it is the duty of the factory inspectors to examine the certificate furnished by the boiler inspector who made the internal inspection of the boiler. This certificate should state a pressure at which the boiler may be safely operated and the factory inspector should observe if the pressure named in the certificate is being exceeded, by ascertaining if the safety valve is set properly to relieve the pressure before it exceeds the pressure stated in the certificate.

This question of safe working pressure is probably the most important in connection with the operation of boilers, and a few remarks in reference to the methods of estimating the safe working pressure of boilers may be of interest to you.

For your information we wish to state that there are two general types of boilers in common use. The fire-tube boiler and the water tube boiler. The horizontal return tubular boiler is of the fire-tube type, and there are probably more boilers of that type in use than of all other kinds. We do not mean that there is more horse power in use in horizontal tubular boilers than in water-tube boilers, but that there are considerably more individual plants operated by horizontal tubular boilers than by any other kind. Speaking generally, in this type of boiler the heat is conducted through tubes in the boiler, heating the water that surrounds the tubes. On the other hand, in the water tube boiler, the water is inside the tubes and the heat is applied to the outside of the tubes. Water-tube boilers are sometimes called "safety boilers" for the reason that some of them are built up on small units, thus rendering an explosion of the entire boiler a remote possibility. However, some types of water-tube boilers are not constructed on

what may be termed the "unit system" and a number of very serious accidents have been caused by the explosion of that class of boiler, as well as by the explosion of tubes or sections in the unit type of construction, so that we can safely state that there is no absolutely safe type of boiler.

The fire-tube boiler is usually found in the smaller class of manufactories where a moderate pressure is required. The water-tube boiler is principally used for the larger plants on account of the reduced space that it requires and on account of the higher pressure at which it may be operated.

In estimating the safe working pressure for boilers, it must be borne in mind that a boiler is no stronger than its weakest part. Therefore, the pressure which the weakest part of a boiler may safely withstand is the maximum pressure to which the boiler should be subjected. In the horizontal tubular boiler, as usually constructed, the weakest part of the boiler is the longitudinal seam. There are several methods of making this seam. The single, double and triple lap riveted types, also the double, triple and quadruple butt riveted seam with inside and outside welt strips.

It may be well to state here that some may contend that these matters in reference to construction of boilers are outside of the functions of the factory inspector and that he is not interested in them. We do not believe that this is the case. If a factory inspector is to make recommendations for the proper care of boilers, he will be in a better position to secure compliance with those recommendations if he understands thoroughly the principles of the construction of boilers and is able to explain intelligently the reasons why the various precautions usual in their operation are necessary. In our opinion the possession of information by the inspector in reference to the advantages and disadvantages of the various methods employed in the construction of steam boilers, should be of considerable value to him in the performance of his duties, and that, therefore, he will be interested in what follows along those lines.

We have stated above that the weak points in the construction of cylindrical boilers are in the longitudinal seam, and will endeavor to show why this is the case. There are two general types of longitudinal seams which may be termed the lap riveted and the butt riveted.

The lap seam is made by lapping one end of the plate with the other end of the plate and joining the two ends by rivets. If the entire cylinder were solid without any joints the strength of the cylinder would be equal to the tensile strength of the metal in the cylinder, but in order to join the ends of the plates, it is neces-

sary to drill a part of the metal away for rivet holes and the part is weakened by the amount of metal that is taken away. In other words if one-half of the metal in the length of the sheet is taken up by holes, it is easy to understand that the strength of the plate would only be half of the solid plates. Therefore, the strength of the boiler would only be 50 per cent. of the strength of the solid plate before drilling.

The above applies to single riveted lap joints. The double riveted lap joint is stronger because the holes are staggered and the distance between the holes is longer, therefore leaving more strength in the plates. There is one serious objection to the lap joint type of construction, and that is due to the fact that, on account of one plate overlapping the other, it is impossible to have the interior of the shell conform to an absolutely true circle. The pressure of steam in a boiler has a tendency to force the shape of the shell into a perfect circle. This tendency causes what is termed a breathing action in the lap riveted boiler. This breathing action will in time destroy the strength of the same and many serious explosions have been due to failures of this kind. Therefore, the butt riveted boiler is considered by all authorities as the safest type.

In the butt riveted type of seam, the ends of the plates, instead of overlapping, are butted together and the boiler made steam tight by inside and outside plates covering the joints and held together by rivets through the three plates. This type of construction is very much stronger than the lap riveted and it does away to a very great extent with the breathing action previously referred to, since the interior shell may be built to a perfect circle.

In the State of Massachusetts, all boilers over 36 in. in diameter must be of the butt seam type of construction.

A well constructed single lap riveted seam has an efficiency of about 58% of the strength of the solid plate; a well proportioned double lap riveted seam has an efficiency of about 70% of the strength of the solid plate; a well proportioned triple butt riveted about 85% of the strength of the solid sheet; and a good quadruple butt joint seam with inside and outside welt strips has an efficiency of about 93% of the strength of the solid plate.

As a result of the above efficiencies, we find that horizontal tubular boilers are seldom built sufficiently strong for a pressure over 150 pounds. The reason for this is, that to build a boiler of that type for higher pressures, requires the metal to be too heavy to be economical in the consumption of fuel. Fire cracks and bulges are also more likely to occur in heavy sheets.

On the other hand, the water-tube boiler being built up of smaller units, or divided into smaller sections, is capable of withstanding

a much higher pressure than the horizontal tubular boiler. A water-tube boiler will also occupy considerably less space than a horizontal tubular boiler for the same amount of power. You will therefore find that the water-tube boiler is necessary for high pressure plants, for which the horizontal tubular boiler is not available.

After ascertaining the strength of the boiler, it is usual to divide the amount of pressure that will be required to burst the boiler by a figure called the factor of safety—the usual factor of safety being five. A lower factor of safety may be safely used for boilers in which the shell of the boiler is not subject to the direct action of the fire, and the factor of safety should be increased as the age of the boiler increases. In the State of Massachusetts, which probably has the most up-to-date boiler laws in the country, a factor of safety of 5 is provided for boilers not over ten years old; a factor of safety of 5.5 for boilers over ten and not over fifteen years old; a factor of 5.75 for boilers over fifteen and not over twenty years old; and a factor of 6 for boilers over twenty years old. It is universally conceded that there is some deterioration or crystallization in the material of which boilers are built and that the factor of safety should be increased as the age of the boilers increases.

One of the most, if not *the* most, important appliances for the safe operation of steam boilers is the safety valve. This valve should always be in perfect condition and it should be tested frequently in order to make sure that it is in proper working order. A good arrangement is to have a light chain connected with the lever on the valve by which the engineer or fireman may test the valve from the floor. There should be a regular rule in every plant that the safety valve must be tested at certain times each day.

In some cases a leaking safety valve will be held down by extra weights upon a lever. This condition is more frequent than many people would believe. The inspector should make sure that the safety valve is not loaded down with extra weights.

We have had a number of cases reported in which the lever of a safety valve had been blocked by a piece of wood between the safety valve lever and the floor joists above.

The conditions above referred to do not usually occur at the times that the regular inspector is expected. We therefore think they are worthy the attention of the factory inspector as the conditions are more likely to be discovered at a factory inspection than they are by the boiler inspector during his regular visits.

There are other causes which render safety valves inoperative. It is not an uncommon occurrence for a safety valve to stick to the seat, due to standing a long time without being used. It is to prevent such conditions that a frequent test is recommended. We remember one instance in which a safety valve on a heating boiler supposed

to be set at 15 lbs. allowed a pressure of 125 lbs. before blowing o
We know of another case of a new boiler being fired for the fir
time in which workmen had allowed some lumber to lay upon t
lever of the safety valve. A pressure of 120 lbs. was observed up
the boiler when the safety valve had been set to blow at 80 l
Luckily no serious results followed the conditions referred to, b
we have no doubt that many accidents each year are due to a simil
cause. That is, to the failure of a safety valve to work at the pressu
for which it is set. We believe therefore that the factory inspecto
time in observing the condition of safety valves on steam boilers w
be well spent.

Another important safety appliance is the water guage for in
cating the height of the water in the boiler. These guages shou
be clean and in good order, and should be tried frequently. T
blow-out glasses should be opened frequently in order to clean t
pipes of sediment. Many well conducted plants have a rule und
which the testing of water gauges and safety valves is done at a giv
time or times each day; usually before a shift in engineers or firem
is made. The night man upon arriving at a plant should test t
gauges and safety valves, before the day man leaves the premis
In the morning the day man should test the water gauges and safe
valves before the night man leaves the premises, thus making su
that conditions are right before the incoming men take charge.

On account of the danger due to the explosion of glass water gaug
on steam boilers, a protecting shield is a very desirable safety a
pliance.

A good indication of the proper operation of a boiler plant
the condition of the steam piping. If there are numerous lea
in the steam piping it is a fairly good sign that the plant is n
having the proper care.

A boiler room should be kept clean. Ashes and coal should n
be allowed to clutter up the floor.

Care and attention should be given to providing sufficient a
easy exits from all boiler rooms as many persons are fatally
seriously injured due to the breaking of a steam pipe or flue, there
filling a room with hot steam and scalding employees who we
unable to make their escape from the boiler room.

The factory inspector should ascertain the methods pursued
the cleaning of boilers, how often boilers are shut down for clea
ing and how long they are allowed to remain down for cleanin
In very many of the smaller or medium sized plants, it is customa
to do all boiler cleaning on Sunday, drawing fires on Saturday nigh
cleaning the boiler on Sunday and filling up the boiler again, havi
it ready for firing by Monday morning. This method of cleani

boilers is unsatisfactory in many respects, as in very many cases the conditions are such that a boiler cannot be properly cleaned during the Sunday shut-down. Boiler owners should be advised to have reserve boiler capacity whenever possible, in order that ample time may be given for the cleaning of boilers, enabling them to cool gradually and be again heated gradually, thereby preventing injury likely to be caused by too sudden changes in the temperature of the boiler, due to sudden cooling and re-heating. The frequency of boiler cleaning advisable, depends to a very great extent upon the quality of water used, but in nearly all sections of the State of Pennsylvania, in our opinion, boilers should be opened and cleaned every three months. When boilers are cleaned, someone in authority should be present in order to see that the work is properly done. The method of leaving this matter altogether in the hands of firemen or cleaners, is not a good one. The plant will be shut down for cleaning, boiler will be opened up, the cleaning performed in a perfunctory manner, the boiler closed again and fired up. If on the following day the attendants are asked if a boiler has been cleaned, they will of course answer "Yes," when in fact, in possibly nine cases out of ten, it would have been impossible to properly clean a boiler in the time that had been allowed for the purpose.

The principal danger due to improper cleaning is the liability of rupturing the boiler on account of an accumulation of scale that prevents the water in boiler from coming in close contact with the shell, thus allowing the shell to become overheated, and in a malleable condition, thereby causing it to bulge and rupture. There is probably nothing more important in the operation of steam boilers than the provision for proper cleaning of the boilers.

Every year a number of persons are killed during the process of cleaning boilers on account of the opening of a valve on a boiler in service, connected with the boiler that is being cleaned thereby throwing a quantity of steam or hot water into a boiler in which a man is at work. This danger can be prevented by locking the valves connected with the boiler that is being cleaned. A simple device for the purpose is a galvanized iron or sheet-iron cover, provided with a lock, that enclose the valve wheel and prevent its being moved. Guards of this kind should be placed on all valves that connect an empty boiler with a boiler under pressure during the time that boilers are being cleaned or repaired.

The factory inspector should observe if proper water level is being maintained in boilers. While it is true many accidents attributed to low water are not due to that cause, it is very important that a proper water level be maintained. Failure to do this indicates a carelessness on the part of the attendants, and may result in a serious accident.

In the high pressure type of boilers, ruptured tubes are quite frequent. When such tubes rupture, a large volume of steam is immediately thrown into the boiler room. If non-return valves are not provided the entire boiler system will be emptied unless some of the employees have sufficient courage to enter the steam filled room and shut off the main valves of the disabled boiler. To overcome this difficulty the non-return valve has been adopted. This valve will automatically close when the pressure of a boiler becomes lower than the pressure at which the valve is set, thus forming a very desirable safety appliance. A non-return valve should be installed on each boiler in every battery of boilers. This is particularly desirable in the high pressure water tube boilers.

A serious difficulty with which boiler inspectors and boiler cleaners must contend is the defective condition of the main steam valves connecting a boiler with other boilers in a battery. If valves of this kind leak the boiler is filled to a greater or less extent with steam or with hot water, thus making it impossible to properly clean or properly inspect the interior of the boiler.

Another very desirable safety device is the fusible plug, which is simply a brass plug with a banca tin core. This plug should be installed at about the water line, the object being to have the fusible core of the plug melt if the water line becomes lower than is safe.

The United States Government insists upon fusible plugs in marine work, and up-to-date boiler inspection laws in various states demand that these plugs be installed. There is no law requiring them in your state, but that is no good reason why they should not be recommended and used.

The blow-off cock on steam boilers should be of a reliable type that may be opened and closed slowly and regularly. The type of plugged cock frequently used is a dangerous feature. Many serious accidents have been caused by the danger in operating a plugged blow-valve that had stuck.

The piping to a water column on a steam boiler should be large in order to reduce to a minimum the danger of it becoming clogged and inoperable. The water column piping and the feed water piping should be connected by plugged tees or crosses having the unused ends of the fittings plugged with brass plugs, in order that the pipes may be examined and cleaned by removing the plugs, thus making thorough cleaning operations possible and convenient.

It often happens in the operation of steam boilers that on account of a necessary shut down, or a failure of a pump to operate or some other cause, it becomes necessary to take prompt action in order to prevent an increase in the steam pressure. In such cases the fire should not be drawn immediately, as the stirring up of the fire by this process would increase rather than to reduce the heat and con-

sequently the pressure. On the contrary, the draughts should be checked and covered with ashes or dirt, or, if such material is not available, with fresh coal, in order that the fire may be deadened as quickly as possible. If a pump or injector is in operation at such times, it should not be stopped, but, if not in operation, it should not be started. A pump or injector should not be started until the boiler has been cooled below the danger point.

In closing, we wish to impress upon you the importance of your work in the prevention of industrial accidents. Boiler accidents are only a small part of the total of industrial accidents that are occuring annually in this country. The work of reducing the number of these accidents is a big one, requiring the intelligence and energetic action of all those engaged in the work. We feel that, in order to bring about the best results, the hearty co-operation of all classes of inspectors is absolutely necessary, and we bespeak the assistance of each one of you in bringing about the desired results by every means within your power. I thank you all for your kind and courteous attention.

THE LIFE HAZARD IN CROWDED BUILDINGS.*

H. J. PORTER,
New York Efficiency Society.

Danger to life in buildings, where there are many people on the different floors, is due to faulty design and construction, especially as to inadequate exits, and is perpetual by the refusal of architects and owners to profit by the lessons of past experience.

For nearly ten years my work in the field of industrial engineering has led me to investigate conditions in factories and to recommend to their owners such changes as I found necessary to be made. In all that time I have rarely found a factory which in my opinion would afford safe egress for its occupants in case of fire and I have had to carry out certain changes in the buildings, which I deemed necessary, in order to make such egress possible, subsequently installing exit-drills not only to show the people how to use the egress facilities supplied, but in order to maintain these conditions continuously.

Now, it is not surprising that factory-buildings should be so defective. In the first place many of them, when built, were never intended to be used as factories at all; and, in the next place, the requirement has seldom if ever been made of an architect that he design a factory-building so that it would be emptiable of its occupants

*Part of the proceedings of the First Pennsylvania Welfare and Efficiency Conference held at Harrisburg, October, 1913.

within a specified time, so short as to assure their safe exit in case of fire.

My studies of the actions of crowds of people show that they are uncontrollable under panic conditions and that it is fundamentally necessary that some provision be made primarily in the design of buildings, in which crowds of people will gather, that will not only insure their having ample facilities for the safe egress of their occupants, in case of fire, but that this safety and its means of accomplishment be familiar to the minds of all. Such provision having been made, the occupants should be trained to take part in an exit-drill, from time to time, in order to maintain their confidence that there is not only not much possibility of a fire breaking out but that if it should they can, in a natural and easy manner, place themselves out of its reach. The difference between ignorance and knowledge of what to do in case of danger is nowhere better exemplified. One invariably develops a panic; the other an orderly procedure.

The first requirement, therefore, should be that the building must be emptiable within a definite, limited time. Buildings should not be finally accepted by the owner until they pass a standard rapid egress test showing that they will meet that requirement and that, too, without taking the elevator service into consideration, except under conditions described later, for elevators have been proven not to be dependable in case of panic or fire. This rapid-egress requirement has been imposed in case of public school buildings and a special building design has been the result.

The facilities for rapid egress, which are generally lacking in factory-buildings, are sufficiently numerous stairways having adequate capacity. The proper relation between the number of occupants of a floor and the capacity of the stairways from that floor to the ground seems seldom to have been understood, carried out or maintained. It does not seem to be realized that a stairway between landings has a definite limited capacity which, in case of an ordinary building with a height of ceiling of from ten to twelve feet, is ten to twelve people, if the stairs are only wide enough for a single file; and double that number, or twenty to twenty-four people, if wide enough for two to go down abreast. If this small number of people comes out from each floor at the same time onto the stairways the latter will be full from top to bottom and if more persons try to follow them they will jam those already there so that no one can go down at all. In high buildings large numbers of persons are thus liable to become wedged and jammed in the stairways and lose their lives by being crushed or thrown and trampled upon, or through suffocation, while those who are unable to get into the stairways at all are forced to the alternative of jumping to death or burning up. Or, if the balustrade of the stairs is old or weak it

will burst and let the people fall into the hall below, as happens from time to time. Such inadequate facilities would not pass standard egress tests at all. They should, therefore, not be accepted until they are altered to meet the established requirements.

So-called "fire-drills" can be developed in which, when there are more than twenty-four people per floor for each stairway 44 inches in width, the excess must wait until those twenty-four persons from each floor have passed down the stairs. The persons comprising this excess number are naturally willing to wait in a "fire-drill" until such time as they can get to the stairway. But such "fire-drill" installed in buildings with the inadequate exits already described simply show people how they may work their way out when conditions are normal and there is no necessity for haste, but they are, in reality, nothing but deceptive makeshifts for they are bound to fail at the critical moment, with possible fatal results. Nor can the number of working-people who fill the various floors be cut down to the requisite twenty-four, from 300 or 200, or even 100 per floor, without disorganization and consequent prohibitive loss to the factory owners.

To avoid the necessity of making such drastic reductions in the number of people occupying a floor, or making people wait for access to the stairways in order to prevent jamming in case of fire, at least two separate and exclusive stairways from each floor may be provided so that all its occupants may pass out in a continuous stream by either one, without conflicting with the occupants of any other floor. In fact it is a basic principle to be followed in securing safety in such places that there should always be two such means of exit, so that if one is cut off by fire the other will be available. They should be separated as widely as possible and surrounded by fireproof partitions to prevent smoke and flames reaching the people who are in them and from passing up from one floor to another.

The "fireproof tower," now quite frequently employed in high buildings as a supposed means of protection to life is really nothing more than a fire-proof and smoke-proof stairway which can be entered only by means of a balcony open to the outside air. It differs from any other stairway only in that its connection with the building is not covered and that it is surrounded by a fire-proof wall. It has no greater capacity than an ordinary stairway of equal width and no more people can be accommodated by it, per floor, than by any ordinary stairway.

Stairways at their best are, however, very unsatisfactory means of egress. I have spoken of their very limited capacity when several floors open into them. Even if each floor has its exclusive and separate stairways a congestion may occur in them, or someone falling will trip up those who follow so that many may pile up and be injured and even suffocated.

Nor can stairways be used as egress facilities from buildings more than six or seven stories high. People in robust health find it quite an exertion to go down more than five or six flights of stairs and every group of people contains one or more persons who are not in good physical condition and who, therefore, are liable to become incapacitated and require the assistance of some of the others and thus block the passage of those who are following; or, by falling, cause a jam of the stairway as already stated.

It seems to me, therefore, that it should be made obligatory by law that all buildings which are intended to be occupied by many people per floor be so designed and constructed that their occupants may at least be reasonably safe in case of fire; and this means that we must seek in some other direction, than that outlined in the preceding paragraph, for a practical remedy for the present situation.

The "fire-wall," or "division-wall," as I prefer to call it, which I have found here and there existing as a party wall between tenement houses or between two buildings occupied as one factory, I have successfully used a safe and quick exit-facility, wherever it has been available, and thus developed a practical measure for meeting all the requirements of the case in hand. This division-wall, for the purpose proposed, should be constructed so as to practically bisect the building and, except in rare cases, it must be continuous from cellar to roof and be sufficiently fire-resisting to provide safety on either side, where there should be at least one stairway and an elevator. It should have as few openings as practicable and these must be closed by automatic fire-doors.

The substitution of temporary fire-stops on single floors, recently advocated, is ill-advised and will not accomplish that guaranty of safety and security which is necessary and which prevents panics with frequent loss of life.

No fire, except one deliberately set by an incendiary, can occur on both sides of this division-wall at one time. If a fire should occur on one side of it the occupants of the building on that side would be notified by a fire-alarm and they would immediately pass through the doorways to the other side, close the doors against the fire and be perfectly safe. They would then have an elevator and stairs, in perfectly normal condition, to use at their leisure as neither of these means of egress would be affected by either flames or smoke, the fire-wall serving as an effectual barrier against them.

This division-wall is not a new and untried device for, as I have stated, it can be found installed here and there and is used most satisfactorily for the very purpose indicated, but when adopted as a permanent feature in buildings of all kinds (and I claim that it can be adapted in department-stores, theatres, hotels, apartment-houses and private residences with equal benefit), then I think it can be

recognized as embodying a new principle in building construction and as such I am warranted in bringing it forward and advocating it as a practical cure for present dangerous ills and a preventive of future ones in making such rules for its introduction as will insure it adoption and installation in the proper manner.

For the purpose of reference I have termed a building so divided as the "bi-sectional" type of building, either side of which can be emptied of its occupants, by means of the division-wall, in less than a minute.

When the division-wall is used, the width of the stairways should be sufficient to meet the double burden placed upon the half equipment for egress which would be left in case of fire. There should be a minimum clear width of stairway of 44-inches, or 22 inches for each two persons going down abreast.

As the streams of water supplied by the Fire Department are limited in height of throw to less than 125 feet and extension ladders are seldom over eighty-five feet in length, it is evident that buildings over seven stories in height must be especially provided for by fire-proof construction, ample exit-facilities, sprinkler-equipment, etc.

It is a demonstrated and acknowledged fact that the general spread of fire through the tall "fire-proof" buildings in the Baltimore and San Francisco conflagrations was due wholly to the lack of suitable fire-proof window protection. Notwithstanding the fact that wire glass, since 1904, has repeatedly proven its ability to successfully withstand attacks of fire from across the narrowest streets, architects and owners until very recently have been extremely reluctant to use wire glass in hotels, high-class office buildings, etc., because, as it was first used in loft and factory buildings, they were afraid the tenants would consider it second-class equipment. Here was a proven remedy, unobjectionable, thoroughly practical and dependable which would prevent future damage from exterior hazards and minimize loss from interior fires spreading upwards through the windows, which has been available for a period of over ten years and is only now beginning to come into general use. This tardiness in accepting improved and superior methods and material solely for sentimental and imaginary reasons is wellnigh criminal and cannot be too strongly condemned. It is the same sort of indifference to facts which has perpetuated the use of fire-escapes which everyone now knows are nothing but fire-traps. The result of this wanton indifference is that, in all the large cities of this country, the many costly buildings, their contents and occupants are constantly menaced by fire dangers which, in case of a general conflagration, would cause almost total destruction of property and possible large loss of life.

PHYSICAL EXAMINATION OF CHILDREN APPLYING FOR EMPLOYMENT CERTIFICATES.

The following report in regard to the examination of children who apply for employment certificates will be of considerable interest to the public and for this reason is published in full:

Harrisburg, Pa., October 20, 1914.

Commissioner John Price Jackson,
Department of Labor and Industry,
Harrisburg, Pa.

My dear Commissioner:—I wish to report to you the result of the medical examination of children between the ages of fourteen and sixteen years, applying for employment certificates in Philadelphia during June, July and August, 1914. This examination was undertaken at the request of the Child Labor Association, which furnished the funds which were necessary for the carrying on of this work. Dr. Cornell, of the Bureau of Health of Philadelphia, who also has charge of the Division for the Medical Examination of School Children, detailed men to assist in this examination. At your request, I detailed Dr. W. H. Blakeslee who had general supervision of this work, besides doing a large amount of it himself. He was occupied in this examination from June 17th to August 31st, 1914.

The result of this examination shows the necessity of continuing this work so as to protect the children from being placed at work when they are physically unable to stand the confinement, long hours and often unhealthy conditions surrounding industrial occupation.

It also, I think, demonstrates the need of classification of employments to which children should be eligible. The first grade is composed of children who are strong and well developed physically and who may be allowed to be employed in any industry permissible by law. Then there is a grade of children who are below par, who should only be allowed to be employed in such industries as would insure plenty of outdoor life and not too long hours. Then there is still another class who should not be permitted to engage in labor at all until after they are sixteen years of age. This classification, in my opinion, should be made by a committee made up of various health officers and physicians who have been examining children in schools.

It might be adopted by our Industrial Board as, under the law, it is required that all children should be physically qualified, as well as mentally qualified before a certificate shall be issued and I believe that the Industrial Board would have ample authority to require such standards. I also believe the board has ample authority to require that applicants for employment certificates should be required to show their physical fitness before these certificates are issued and I believe further that as the school authorities already have a very

efficient system for the examining of children, it would be advisable to arrange, if possible, with them to see that these examinations are made.

A summary of the total number of children examined in Philadelphia in the above named examination was 3,964. Of these 724 were found without defect; 3,224 with one or more defects. There were 336 certificates temporarily refused because of the need of proper glasses and 75 refused because of bad teeth. These certificates were afterwards granted when the defects were corrected. There were 16 certificates refused absolutely, because of the following defects: heart disease 2; poor nutrition and anaemia 1; refused to wear glasses 1: Pthisis 3; pthisis with mitral regurgitation 4; suspicious tubercu losis of the lungs 1; tuberculosis of hip with mitral regurgitation 2; Rheumatism with mitral regurgitation 1; and nephritis 1.

Respectfully submitted,

(Signed) JOHN C. PRICE.
Chief Medical Inspector.

The following table shows in tabular form the result of the medical examination of 3,964 children between the ages of fourteen and sixteen years, applying for employment certificates in the City of Philadelphia from June 17th to August 31st, 1914, inclusive:

SUMMARY.

	Males 14 years.	Males 15 years.	Total males.	Females 14 years.	Females 15 years.	Total females.	Total males and females.
RACE:							
White,	1,467	345	1,812	1,109	259	1,368	3,180
Colored,	26	7	33	6	5	11	44
POSTURE:							
Erect,	1,116	285	1,401	953	236	1,189	2,590
Stooped,	377	66	443	161	28	189	632
DEFORMITIES:							
None,	1,429	349	1,778	1,089	264	1,353	3,131
Spine, Scoliosis,	17	1	18	18	.....	18	36
Spine, Abnormal,	1	1	2	.....	.....	.....	2
Limbs, Abnormal,	2	1	3	6	.....	6	9
Limbs, Flat Foot,	2	.....	2	.....	.....	.....	2
Limbs, Artificial,	2	.....	2	1	.....	1	3
Limbs, Shortened Leg,	1	.....	1	.....	.....	.....	1
Limbs, Ankylosis of knee,	1	.....	1	.....	.....	.....	1
Wry Neck,	1	.....	1	.....	.....	.....	1
CHEST:							
Normal,	1,237	323	1,560	1,005	256	1,261	2,821
Flat,	251	29	280	107	8	115	393
Funnel Breast,	.....	.....	.....	1	.....	1	1
Pigeon Breast,	2	.....	2	.....	.....	.....	2
Chicken Breast,	3	.....	3	.....	.....	.....	3
Asymmetrical,	.....	.....	.....	1	.....	1	1
HEART:							
Normal,	1,453	345	1,798	1,095	257	1,252	3,050
Abnormal,	2	6	8	.....	.....	.....	8
Mitral Regurgitation,	35	2	37	16	7	23	60
Aortic Sclerosis,	1	.....	1	1	.....	1	1
Tachycardia,	.....	.....	.....	1	.....	1	1
Mitral Stenosis,	.....	.....	.....	1	.....	1	1
Haemic Murmur,	2	.....	2	1	.....	1	3

SUMMARY—Continued.

	Males 14 years.	Males 15 years.	Total males.	Females 14 years.	Females 15 years.	Total females.	Total males and females.
LUNGS:							
Normal,	1,463	350	1,813	1,101	263	1,364	3,177
Tuberculosis,	3	.....	3	1	.....	1	4
Susp. Tuberculosis,	19	2	21	10	1	11	32
Bronchitis,	6	.....	6	2	.....	2	8
Abnormal,	1	.....	1	.....	.....	.....	1
Bronchitis and Susp. Tuberculosis,	1	.....	1	.....	.....	.....	1
NERVOUS SYSTEM:							
Stable,	1,484	348	1,832	1,105	263	1,368	3,200
Unstable,	9	3	12	9	1	10	32
Tremors,	.....	1	1	.....	.....	.....	1
NUTRITION AS MODIFIED BY:							
Anaemia, None,	1,289	291	1,580	966	237	1,233	2,813
Anaemia, Moderate,	193	38	231	138	27	165	396
Anaemia, Marked,	11	3	14	10	.....	10	24
Ht. & Wt., Good,	1,281	307	1,588	994	244	1,238	2,826
Ht. & Wt., Fair,	176	44	220	109	18	127	347
Ht. & Wt., Poor,	15	2	17	11	2	13	30
Post. & Defor., Good,	1,379	330	1,659	1,055	251	1,306	2,965
Post. & Defor., Fair,	100	22	122	53	12	65	187
Post. & Defor., Poor,	11	1	12	6	1	7	19
VISION:							
Right eye, Good,	1,171	281	1,452	831	216	1,047	2,499
Right eye, Fair,	211	53	264	220	31	251	515
Right eye, Poor,	71	19	90	62	17	89	179
Left eye, Good,	1,186	279	1,465	831	217	1,048	2,513
Left eye, Fair,	203	57	260	225	33	258	518
Left eye, Poor,	67	17	84	60	14	74	158
EYES:							
Glasses worn,	148	37	185	152	29	181	366
Held for glasses,	142	44	186	132	44	176	362
Blepharitis,	8	1	9	7	.....	7	16
Conjunctivitis,	1	.....	1	1	.....	1	2
Squint,	9	.....	9	7	1	8	17
Glass eye,	1	.....	1	.....	.....	.....	1
Ptosis,	1	.....	1	.....	.....	.....	1
Corneal Opacity,	1	.....	1	2	.....	2	3
Cataract,	.....	1	1	.....	1	1	2
Nystagmus,	.....	1	1	.....	.....	.....	1
NOSE AND THROAT:							
Tonsils, Normal,	1,233	298	1,531	904	221	1,125	2,656
Tonsils, Fair,	220	50	270	192	39	231	501
Tonsils, Poor,	41	5	46	19	4	23	69
Obstruction, Normal,	1,350	318	1,668	1,053	248	1,301	2,969
Obstruction, Moderate,	102	33	135	52	13	65	200
Obstruction, Marked,	23	2	25	8	2	10	35
Catarrh. Normal,	1,099	299	1,391	814	226	1,040	2,431
Catarrh. Moderate,	365	51	416	291	33	324	740
Catarrh. Marked,	17	3	20	8	5	13	33
TEETH:							
Normal,	853	216	1,069	616	168	784	1,853
1 to 3 decayed,	593	124	717	454	91	545	1,262
4 or more decayed,	48	10	58	43	4	47	105
HEARING:							
Right, Good,	1,475	347	1,822	1,106	263	1,369	3,191
Right, Fair,	16	4	20	8	.....	8	28
Right, Poor,	3	2	5	.....	1	1	6
Left, Good.	1,474	346	1,820	1,107	264	1,371	3,241
Left, Fair.	17	5	22	7	.....	7	29
Left, Poor,	2	2	4	.....	.....	.....	4
TUBERCULOSIS:							
None,	1,467	349	1,816	1,103	263	1,366	3,182
Active Lung,	4	.....	4	.....	.....	.....	4
Susp. Lung,	21	3	24	10	1	11	35
SKIN:							
Acne,	3	3	6	8	.....	8	14
Pediculosis,	2	1	3	12	.....	12	15
Eczema,	2	.....	2	1	.....	1	3
Impetigo,	.....	.....	.....	1	.....	1	1
Furunculosis,	1	1	2	.....	.....	.....	2
MISCELLANEOUS:							
Goitre,	1	.....	1	8	.....	8	9
Defective Speech,	3	.....	3	4	.....	4	7
Frac. Patella,	1	.....	1	.....	.....	.....	1
Mentally Defic.,	.....	.....	.....	2	.....	2	2

RECENT IMMIGRATION TO PENNSYLVANIA.

In the last report concerning immigrant conditions in Pennsylvania, the statement was made that almost one-half of our population is of alien origin.* It is found upon investigation that except for the usefulness of this one-half in our industries the other half pays little attention to it.

Throughout the small towns of Pennsylvania, there is oftentimes appalling ignorance of the alien residents of these places. Unless they own property, and thereby, get on the assessors' lists, there are no town records available as to their number. In schools, throughout the State, there is a surprising lack of statistics concerning alien children. Statistics as to naturalization are found only at the various county seats. Were it not for the census reports which gather the data for the various towns into a comprehensive whole, there would be no satisfactory figures available.

It is to be regretted that of the town officials, the police are best acquainted with alien residents; for this means that the aliens, unless they interfere in some way with the liberty of the natives, are not subjects of much concern. They are restrained when necessary, but not instructed, and rarely even inquired about.

When it was asked of one town official concerning the "alien residents," he said, "I don't think I understand what you mean by 'alien residents.'" A district superintendent of schools said, while writing a list of alien children, "Will you please spell 'alien' for me?" Another town official said 'Yes, we have a block of foreigners on such and such street. They're Italians, or Poles, or Greeks—well, I don't know what kind they are, but they're foreigners."

Recent immigration to the United States is bringing with it different problems from that of years ago. Instead of the Teutonic races who are really our own cousins, as it were, and readily recognized among us, there are coming "foreigners," in the real sense of the word; people who are more or less helpless when they get among us, easy victims of abuse, and difficult to aid because of the general disparity between their mode of living and ours. Pennsylvania, having its own port of entry at Philadelphia, is getting a generous share of these new immigrants.

The following table for Pennsylvania from the 1910 Census shows how large the figures for the Eastern European races and the South Italians have grown in a decade in comparison with the figures for the Teutonic races, which in general remain fairly well balanced:

*Alien origin includes "persons born abroad and also natives having one or both parents born abroad."

EASTERN AND SOUTHERN EUROPE.

County of Origin.	1910.	1900.
Austria,	403,102	118,961
Russia,	387,486	121,037
Italy,	298,554	93,973
Hungary,	179,712	68,715

NORTHERN AND WESTERN EUROPE.

County of Origin.	1910.	1900.
Denmark,	5,950	4,427
England,	289,470	277,157
France,	23,843	21,864
Germany,	654,684	658,034
Ireland,	570,467	631,594
Norway,	3,963	2,334
Scotland,	82,468	74,088
Sweden,	51,685	44,828
Switzerland,	17,831	14,493
Wales,	86,301	89,148

Of total white stock of foreign origin in Pennsylvania,

Austria contributes 12.4 per cent; Russia, 11.9 per cent; Italy, 9.2 per cent; Hungary, 5.5 per cent.

This shows that 39 per cent of our immigrants come from Austria, Russia, Italy and Hungary.

According to the report of the Commissioner General of Immigration, for the fiscal year ended June 30, 1913, the number of immigrant aliens admitted, who gave Pennsylvania as the state of intended future residence, was 182,744. Of these, there were 41,996 South Italians; 32,249 Polish; 14,172 Croatians and Slovenian; 12,200 Slovak; the number of other races, including those of Teutonic origin, falling below 10,000 in each instance.

During the decade, 1891-1900, the race contributing the largest number of immigrants to the United States, was the South Italian; and according to the 1913 Report of the Commissioner General of Immigration, it is seen that the South Italian heads the list of those coming to Pennsylvania.

This race brings special problems, because it represents the poorest of Italians, with the least education, and with little training in any form of industry. In the cities of Pennsylvaia, we find these people in the poorest sections, creating serious sanitary problems on account of overcrowding and careless living, and at times threatening the general safety by quarrels and fights that sometimes end in murder. The children, however, are encouraging to deal with, and in all sorts of educational work, they are apt pupils. The long inheritance of fine intellect of the Italian race comes to life again

under stimulating mental exercise. The children readily learn English, and communicate to their homes an inspiration for higher ideals. But the Italians are also connected with us in racial inheritances and while farther removed from us than the races of western Europe, they are readily assimilated by reason of a common sympathy that underlies the present divergence of habits and customs.

In the report of the United States Immigration Commission, the statement is made: "Of the total immigration to the United States, about one-fourth is now Slavic, over one-third comes from eastern Europe and over three-fourths comes from eastern and southern Europe."

The Slavic races, while presenting the most difficult problem as regards assimilation, contribute most to our industrial world. Pennsylvania, in its mines, and in its iron and steel plants, employs thousands of Slavs. These races in physical strength and endurance excell all our immigrants. On the other hand, in inheritances and customs they are least like ourselves; their language is so dissimilar, that they find it exceedingly difficult to learn English.

The barrier of language makes these people suspicious of our advances, so that it is difficult to help them. They do not create the sanitary problems of the South Italians, because they are naturally better housekeepers, but in quarreling and drunkenness they exceed the Southern race. They are far more clever in business than in school. The Italian is poor and improvident, but he is brilliant in school, when he has the opportunity; the Slav is thrifty and shrewd in money matters, yet stupid in school. In one of our cities a college was erected for young men of this race, but it was found that beyond knowing enough English to safeguard money affairs, there was no ambition. With these people the enthusiasm must be created from without, which adds to the burden of teaching them.

The races now resident within our State need to be studied in every phase of their living. Except in our several large cities, this work has not been done, and rarely given any thought. Here and there, in a small town, an interested social worker has made a study of the foreign residents. Some private organizations get hold of one phase or another of the alien's life, but no general organized movement has so far been attempted. The Department of Labor and Industry, by means of schedules drawn up for that purpose, is making a general preliminary study of immigrant conditions throughout the State. Upon the completion of this study, it is hoped that an intelligent understanding of the condition of aliens in Pennsylvania will be obtained.

A PRELIMINARY REPORT OF THE INSPECTION OF TOBACCO FACTORIES.

The health of female workers in the tobacco industry has recently been a much discussed subject. Statements have been made contending that the manufacture of tobacco produces in its workers almost every ill which may befall mankind. On the other hand, we have been told that not only are tobacco workers remarkably free from disease but that they are also not so susceptible to infectious diseases occurring in epidemic form as are people engaged in other industries. Some of these statements must of necessity be incorrect. In order to obtain first hand data for use of the Department, the Commissioner, at various times during the past nine months, has been having conducted, special inspections of tobacco factories.

These inspections were made in Philadelphia, Pittsburgh and in various smaller places in the counties of Lancaster, Bucks, Montgomery, Lehigh and Northampton. Most of the investigations were carried on in the cigar and stogie factories with their accompanying stemmeries, as they constitute by far the largest branch of the tobacco industry in this State. A few cigarette and chewing tobacco factories were, however, included in the list. Eighty establishments were visited. The number of operatives per plant varied from the family workshop employing 2 or 3 people to the large factory giving work to more than 700 workers. The total number of employees was 11,400, divided between 3,500 males and 7,900 females.

The cigarette factories in this State employ machines so largely in the manufacture of their product that they can scarcely be considered a menace to health. The same may be said of the chewing tobacco establishments. It is, however, the cigar and stogie industries that are most numerous and most open to criticism. These plants employ women in stemming; cigar-making proper, including bunching and rolling; packing and banding.

The banding is done almost exclusively by young girls. It requires little real skill, but to make it a profitable employment it does require dexterity. The amount of dust given off by the cigars is negligible and when the bands are not moistened by being placed in the mouths of the workers, it can not in itself be considered a dangerous occupation.

Packing ranks next in point of harmlessness, as here too the tobacco dust is a small factor. Diseased conditions due to constant standing might well be considered among these women but as such conditions accompany so many other industries, they should

not be regarded as one of the hazards peculiar to the manufacture of tobacco.

Cigar-making proper and stripping are the branches which are most in need of improvement. It is practically among these two classes of workers only that any history of variations from normal health due exclusively to tobacco could be elicited. When questioned individually the large majority claimed that they felt no ill effects from the tobacco. A few, however, stated that on first beginning work they had had headache, nausea, or both, lasting from a few days to a month. Some added that even after many years of work in the cigar factory they had a return of these symptoms after an absence of a few days from work. The air of the stemmaries was often very oppressive, caused not only by the odor of the moist tobacco but also by the presence of many people in an inadequately ventilated room. The chief faults of the rooms occupied by the cigar-makers were also lack of ventilation together with dust. Some factories had mechanical ventilating devices installed which not only kept up a constant exchange of air but also acted in slight degree as dust removers. The air in these establishments was very noticeably of better quality than in those which did not have such appliances. The occupation is of necessity dust-producing but in many factories this condition was tremendously increased by the insanitary practice of brushing the cuttings to the floor where they lay for hours at a time. Every movement of the feet or the chairs of the workers ground some of this tobacco into dust, to be mixed later with the air of the room.

The conclusions reached through the work done thus far are that with certain changes in working conditions, the dangers to the health of not only the women but of all the employees can be reduced to a minimum. The first of these is cleanliness, for unless the employees and the employers co-operate to procure the greatest possible degree of cleanliness all other devices will be of no avail. The second is adequate air space. The third is proper ventilation which would include provision for a complete change of air at intervals regulated by established standards. The fourth provision is exclusion of all employees from the workroom except while engaged in actual work.

These investigations are by no means complete and this report is merely preliminary. The chief purpose in submitting it to the public at this time is to call for expressions of opinion as to what can be done to improve conditions in this industry. The Commissioner will be glad to make special investigations or receive any suggestions which, in the opinion of those interested, will tend to further this object.

PERMANENT SAFETY EXHIBIT.

The Department is at present engaged in the work of preparing an educational exhibit which will show different safety devices that are being used throughout the State and also different devices which are useful in the protection of life and property from fire. This exhibit will also contain photographs of work which has been done among the various industries of the State along educational, welfare and safety lines.

All articles which are placed in this exhibit will contain a uniform label, upon which will be placed the use and object of the same, together with the name and address of the manufacturer or concern which has perfected or which has made use of it.

Quite a large number of manufacturers have donated various articles for this purpose, feeling that the publicity thus given will fully repay the actual cost of the article donated. The Department shall be glad to hear from any persons who have anything along the above mentioned lines which they should like to have placed in this exhibit.

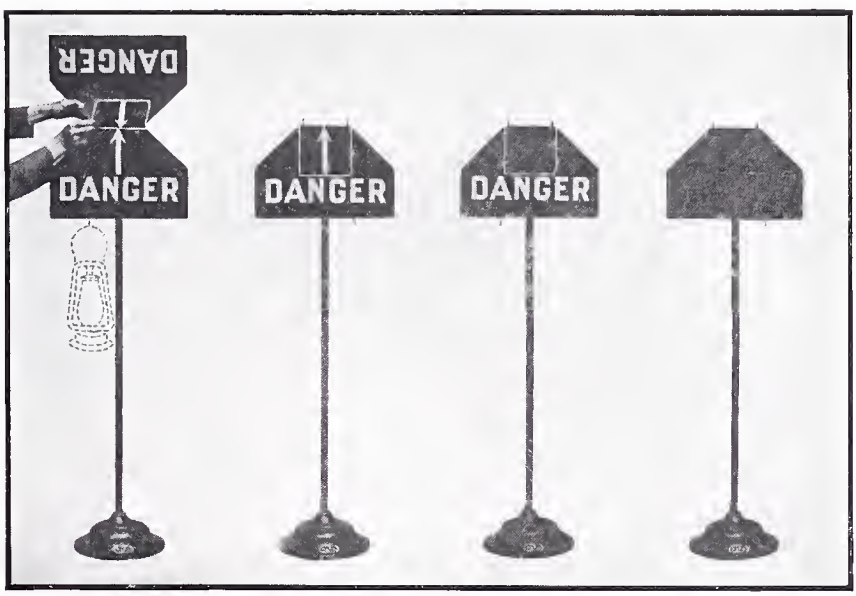
FOUNDRY LEGGINGS.*

It is the practice of workmen in some foundries to wear leggings when they are working about molten metal. The majority of foundry employees, however, provide no greater protection to their legs than that which is afforded by their trousers alone. While the trousers sometimes ward off splashes of metal, they cannot be depended upon for this purpose; they are frequently scorched or burnt through and often ragged at the bottom. But even when in sound condition, workmen's trousers catch in the shoe tops and then leave dangerous openings if the shoes should not fit snugly, or they slide up on the workmen's legs and expose them to danger; foot and leg-burns also happen through neglect of workmen to turn down the cuffs of their trousers when they are handling molten metal. In some parts of the country, knee high boots are worn in foundries to give better protection to the legs and feet, but they are uncomfortable, expensive and hard to remove; when, as is usual, they are worn outside of the trousers, the boots flare open at the tops and give molten metal a splendid chance to cause injury.

*Taken from the N. F. A. Safety Bulletin.

Danger and Safety Signs

These are low-priced signs, desirable for attaching to sign boards or partitions. They are printed on cloth with green or red background.



Note the three sign plates, also hook for lantern at night.

Arrow exposed, (on both sides) to warn of overhead danger.

Arrow covered, (on both sides) to warn of surface danger.

All warnings folded out of sight when there is no danger.

METAL FLOOR-TYPE DANGER SIGN.

(About 4 ft. 6 in. high. Weight about 30 lbs.). Red background with white letters.

FOUNDRY LEGGINGS.

In order to afford needed protection, the practice of wearing leggings should become universal among foundrymen who are working about molten metal. The leggings must, however, be so made as to be well suited to foundry service; their material is of lesser importance. Sometimes asbestos leggings will prove most suitable, and on account of their fire-proof qualities their use will be necessitated; usually, however, they will be found undesirable, for they are heavy, uncomfortable and expensive. Similar objections attach to heavy leather leggings. Canvas leggings, on the other hand, seem to give most satisfactory service under generally prevailing conditions. The kind usually worn, however, is open to much criticism. They are held in place by buckles, clasps or buttons, often a foot-strap is used to hold the hood of the legging down on the shoe. It is obvious that these projecting fasteners offer objectionable places for molten metal to lodge upon and burn through; moreover, such leggings cannot be thrown off quickly in case of accident. While leggings of this construction fit snugly on one size of leg, they prove too large for another size and then leave an open space at the top into which molten metal may enter. Even with their many faults, however, these leggings, which were not especially constructed for, or adapted to foundry use, have helped greatly to reduce burnt foot and leg injuries.

In order that their protective advantages may be more universally and more fully utilized, without the accompanying faults already referred to, foundry leggings should be constructed to suit the conditions peculiar to foundry service. They should be so made that they can be quickly thrown off in case of emergency, and be easily put on, so as to allow no excuse for neglect to wear them. The surface of the leggings should be smooth, with no projecting clasps or straps to which splashes of metal might cling. One size legging should be suitable for any size of leg; it should fit the leg snugly at the top, yet without wrinkling the legging and without discomfort to the wearer. When worn with Congress type foundry shoes, the combined legging and shoe should afford as good protection as when knee high boots are worn, yet without the danger and discomfort of the latter.

Leggings of this character were recently made. They were at first constructed with an extension hood to reach over the front of the shoe, so that even laced or buttoned shoes could be worn with immunity. When the hood is strapped down, however, unbuckling of the strap hinders quick removal of the leggings, and the straps are apt to catch molten metal and retain it. When not fastened down, the hood itself is liable to bend up and wrinkle, thus offering a pocket in which molten metal can lodge. Aside from these disadvantages, however, leggings with extending hoods would, no doubt, make it more

difficult to secure the general use of Congress type foundry shoes, which, after all, are the only safe shoes for foundry service.

Samples of the proposed leggings, without an extension hood, were sent to and tried out in various foundries, under the assumption that they would be used in combination with Congress type foundry shoes; these samples found much favor and brought forth several suggestions of value from foremen and workmen.

A standard type of legging, embodying these improvements, was therefore designed, to be known as the N. F. A. Foundry Legging, and is now recommended for general use of foundry employees when handling molten metal. This legging consists of a tapered canvas sleeve fitted with suitable spring clasps to hold it in position. The use of canvas was adopted because it lends itself to economical manufacture, is light and comfortable, and both by severe test and practical use in foundry service for long periods has shown its ability to shed molten metal from its surfaces. In some cases of severe and continuous duty, the use of asbestos may be necessary, but the construction of the leggings may still remain unchanged. Leather and so-called flame-proof materials do not offer advantages that would balance their extra weight, discomfort or cost.

The N. F. A. Foundry Legging is kept in position on the leg by two flat springs, which are enclosed in suitable pockets to the top and bottom; these springs are sufficiently flexible to allow quick removal of the legging, yet have enough tension to hold it securely in place, without the use of straps, buckles or buttons. A canvas collar, slightly drawn in, is fastened at the top of the legging, where it makes a snug fit about the leg, avoiding a gap that would otherwise allow the entrance of molten metal there. A canvas flap is attached to the back of the legging, to be tucked within the legging with the trousers, so as to cover the leg completely with canvas, even if the legging, when worn on a stout leg, should not reach completely around it. One size of legging is therefore suitable for any size of leg.

To prevent buckling of the legging, which might develop objectionable wrinkles, suitable stiffening ribs are secured inside of the legging running from top to bottom.

The combination of such Foundry Leggings and Foundry Shoes offers complete protection, yet either shoes or leggings can be removed quickly. The leggings need to be worn only when molten metal is being handled, when, in addition to protecting the workman himself, they will prevent scorching and other damage to his trousers and will protect the elastic gore in his shoes from damage by heat. Such leggings* and shoes can be obtained at reasonable cost.

The experience in some foundries, where, through the use of Congress shoes and canvas leggings, even of the somewhat faulty kind

*Address Secretary of the Conference Board, Mr. M. W. Alexander, West Lynn, Mass.

previously described, foot and leg burns have been practically eliminated, would justify the claim that the use of "Foundry Leggings" and "Foundry Shoes" by all men who work about molten metal, together with their daily judicious oversight by foremen and reasonable care on the part of workmen, offers an effective means by which foot and leg burn accidents in foundries can be avoided.

REMEMBER:—PERSONAL CAUTION IS THE GREATEST SAFEGUARD, AFTER ALL.

DANGER AND SAFETY SIGNS.

The accompanying potographs show several kinds of the danger and safety signs which have been standardized by the Conference Board on Safety and Sanitation, composed of the National Founders' Association, the National Association of Manufacturers, the National Metal Trades Association and the National Electric Light Association. These signs are printed on cloth in legible white letters on a red or a green background. The metal floor type signs stand about four feet six inches high and are substantially constructed of iron and painted with white letters on a red background.

Both these types of signs have proven useful in many instances and can be obtained at a nominal cost from the Secretary of the Conference Board, Mr. M. W. Alexander, West Lynn, Mass.

FORMER ISSUES OF THE MONTHLY BULLETIN.

The Department is experiencing a great deal of difficulty in supplying all of the demands for copies of the monthly bulletin. Unfortunately, the issue is limited by law and is insufficient to supply all the requests which are received. It would accordingly be appreciated if any person has copies of the last three issues, especially the June Bulletin, which they do not need for permanent files, if they would take the trouble and expense to return them to this Department. This service would be of great help in supplying a need, which the Department in itself is unable to fulfill.

DISCUSSION DURING THE 1913 CONFERENCE*

Mr. Thomas L. Wilson, of the International Assoeiation of Machinists, Philadelphia, Pa., spoke as follows:

I believe, Mr. Chairman, that every person is more or less interested in welfare and efficiency. Efficiency in the trade I represent has been brought to a very high standard. The engineer has done his part. We have not seen anything in the moving pictures, which otherwise were very interesting, about an increase in the pay check. So far as accidents are concerned, I believe it is only fair that the employees should say something to the employer as to the prevention of accidents. It is proper and it is good to put as many safeguards as you can on the machine, but we must not forget that the worker himself must also be taken care of. Some years ago the sleeve of my overall was caught in a belt and the arm broken in four places. What happened? The foreman, the generous hearted foreman, had his pencil out and my pay stopped before they got my arm out of that machine. Now, that is one of the serious things about it from the workman's point of view, and it is right that these things should be brought out in this welfare and efficiency conference. It is well to spend a lot of money in the safeguarding of the shops. More people die in bed than in the machine shop and bed is supposed to be a pretty safe place.

I believe, however, that the State is going in the right direction. I don't believe you can put too many guards around the gear wheels. It is very easy for a man to point at a gear wheel while it is going around, and he is liable to lose his finger. It is right that we should put something there to keep him from doing it. The sanitary conditions of the shop should also be watched very closely. If the reports of the medical societies are correct our sanitary conditions should be just as much taken care of as the gears.

Mr. John Whitehead, Secretary, Textile Workers of Ameriea, Philadelphia, Pa., spoke as follows:

I want to suggest some things to the Department of Labor and Industry under the heading of accidents. My experience has been that the Inspectors often have not worked at the particular line of business that is carried on in their district, and I think it would be a good move to have inspectors who have worked in a certain industry assigned to a district in which is located the industry with which

*Part of the proceedings of the first Pennsylvania Welfare and Efficiency Conference held at Harrisburg, October, 1913.

they are familiar. I believe you will agree with me that a textile worker would be somewhat out of place in a mine as an inspector. I merely give this as an illustration. I do not believe there is any worker who would intentionally put his finger in the fire to burn it. My own experience has been that I have not been as careful as I should have been of myself and my surroundings, because I had to make a wage during my week's work, in order to be able to put it where it was needed. Unless the conscience of the people is aroused I do not expect very much to be accomplished in bringing about what we all seem to desire. It is all very well to meet here. We are a little more fortunate, but I believe if we were in Philadelphia with those who are on strike to-day in the textile mills, we would have a proper environment to see and be impressed by the things we are considering.

The great problem will be for the Department of Labor and Industry, which is a branch of the Executive Department of the government of this State, to enforce the laws. It has too often been the case that the departments do not realize their full duty and power. I hear them say that they have only a few men, but I take it that they have the police system behind them. They have the judicial department behind them and the legislature behind them and I know that the people are absolutely with them. It is all very well to wait for co-operation from this source and that source. They are being paid to do their duty and they should carry out the wishes of the people.

When I go back home I will hardly know how to report on this conference. There have been many, many new things suggested to mine owners, railroad owners, the department stores, the textile industries, and so on. I do not care to participate alone in what I would call an orgy of oratory. We can have too much of that without any substance and I believe it would be far better if each man will get up and say "I will do all in my power to better conditions." I believe it would then mean something. I know that many of the labor unions have refused to send anybody here. I wanted to take back a report which would show that this meeting had been of some benefit. Unless we look at things as they are and face them it will not avail much. Take this program from beginning to end. Does it satisfy your mind that it has the representatives of labor organizations, manufacturers' associations and insurance companies equally divided so that they can each voice their needs and desires in connection with the subjects confronting us. As for myself, I am just trying to explain the attitude of the men with whom I work and live. As for expressing, you might say, what we would be willing to do and so forth, we have not entered into such a discussion to my way of thinking.

Mr. Carl M. Hansen, Secretary of the Workmen's Compensation Bureau, New York, said:

I first desire to express my deep appreciation of the opportunity afforded of being present here. The institution which I have the honor and pleasure to represent is the result of co-operation solely. I was very much interested in Dr. Chaney's remarks on "Standardization" for the reason that our Bureau is charged with the establishment for the entire United States of safety standards and sanitation standards. It is established to maintain in the accident prevention field the same position as is to-day maintained by the fire underwriters in the field of fire prevention. We have already progressed sufficiently far to issue our first set of safety standards. I thought I should have had it here for distribution. Unfortunately, our printers fell down, but with your permission we shall forward to every person here a copy, as we shall also forward them to every State official in the United States who is interested in this movement.

As stated, the Bureau is the result of co-operation. Up to within a year ago the liability companies of the United States, and they number fifty, each maintained inspection departments. These inspection departments have, as you all know, done immeasurable good, but unfortunately the spirit of co-operation was lacking. They did not have standards; exactly the same condition as exists to-day between the different State Factory Inspection Departments.

It has been my fortune, and it has been my duty, to travel all over this country, from the Atlantic to the Pacific, from Alabama to the Dakotas. I have made a careful study of the laws and regulations and ordinances in the various Commonwealths and various cities, and there is a woeful lack of uniformity. We must, if we are to achieve results, standardize, especially so far as the prevention of accidents which are attributable to mechanical causes, are concerned. I agree with Dr. Chaney that the human equation can never be standardized, but let us not overlook that approximately 20 per cent. of all accidents are due to mechanical causes, to eliminate which is but a simple engineering problem. A set of gears, however, in the State of Pennsylvania or in the State of California, is a set of gears and should be guarded in the same manner. We should use the same standards. That is true about every mechanical appliance. Standardization is the keynote to-day in manufacture. Think of what the conditions would be if every automobile manufacturer tried to put on the market a different size tire or a different spark plug. It would be chaos and the public in general would be the sufferers. This is equally true as far as accident prevention is concerned, and I bespeak, Mr. Chairman and Gentlemen, for the Workmen's Compensa-

tion Bureau Service in New York, your hearty co-operation. We are not conducted for profit. Our financial requirements are met voluntarily. We offer our service free of charge to any State department or to any manufacturer, and we ask in the cause of accident prevention, for the purpose of saving human lives which are to-day wantonly wasted, that we have your co-operation.

Mr. Thomas J. Jones, Superintendent Oliver Iron and Steel Co., of Pittsburgh, said:

I was sent here by my firm to see what I could learn to take back to uplift the working men as well as help ourselves. I am very glad indeed that I came because I have been inspired with what has been said by these experts. I am manager of a mill. I have done something in this line to help to protect ourselves as well as to protect the men. Perhaps there was some selfishness in it. I know that it is costly to have accidents in the mill. I have been pleased with the discussions in regard to sanitation. We have spent some money in protecting machinery, but I want to tell you I will go back with the report, and I think a wise one, that the people of Pennsylvania are awakening to the fact that they must help the working man, to uplift him. I will do all I can and I will guarantee the Department of Labor and Industry the hearty co-operation of the Oliver Iron and Steel Company with money and whatever is necessary to uplift the people.

There is one thing I want to impress upon you and that is the golden rule between employees and employers; between capital and labor. "Do to others as you would have others do to you." Don't let us forget that.

Edwin R. Wright, Illinois Federation of Labor, Chicago, Ill., said:

I happen to be a labor organizer and several of the gentlemen affiliated with the different crafts have asked within the last day or two what practical benefit will accrue to them from meetings of this kind. I have tried it (this sort of agitation) for a number of years in our territory and I find it has the best possible results. Even if the members representing organized labor should remain in their seats, still they will achieve something from a meeting of this kind. Mr. Hoffman told us yesterday that thirty thousand men lost their lives in the industries of the United States. If a meeting of this kind can reduce the loss of life among workers, you are accomplishing a direct result. We have definite figures to show that in some industries seventy per cent. of the accidents have ceased.

The day before yesterday I quoted data showing that sixty per cent of accidents have ceased in the more dangerous of the building industries in the State of Illinois. These men are alive and well. All of the men in the industry have been able to divert a part of their energy to some line of thought other than worry over possible accident, and are drawing higher wages (probably ten cents an hour more) than formerly.

We workers are drawing higher wages now than when we were subject to all evils of occupational diseases. We have built up my own particular organization, the Typographical Union, until to-day there is not a man or woman in the smallest town of the United States, or Canada, working over eight hours a day or drawing less than fourteen dollars a week. We had to fight to preserve our health; we had to fight to conserve our strength—and in a large measure we succeeded.

Taking the value of human life as we found it in Illinois when studying conditions previous to drafting the Workmen's Compensation Law, we found that the worker was worth less, on an average, than five hundred dollars. I have not excluded the highest paid man on the railroads—the engineers, the firemen and conductors whose heirs were drawing approximately eleven hundred dollars for their accidental deaths under the old liability law. We are now paying under the Workmen's Compensation Law half as much again to the lowest paid man on the railroads. Is not that true progress?

We can save one-half of the lives formerly wasted, if we preach caution to the men. It is not expensive safety devices that will save them. It is the interest of the men themselves, and, to my way of reasoning, when they save millions of dollars to their employers they have a legitimate right to go back to the industries and say: "We have saved you millions of dollars through our efforts in preventing accidents; now, put the major part of it in our pay envelopes because we enabled you to save it and it is our money."

Through conferences of this kind we can protect the worker by calling attention to the necessity for the enactment of safety laws, and we are going to enforce these laws better than we have ever done before. We cannot expect the employer, or his agent, to become the valet of the workmen and inspect his shirt and put it on the workmen's back every morning. We do not desire that. We must teach the workman to look after his own safety. That is one of the important things we must do.

One of our scientific brothers spoke on standardization. All right, to some extent we have standardization. It seems about time for the manufacturer to send out a piece of machinery that will meet, at least, the ordinary standards set for the industry. I can go into a

shop or factory and tell you whether it is an American made piece of machinery, or German-made machinery. Over there they find it cheaper to preserve lives than to get in new men to take the places of those who have been injured or killed. That is what we have not been doing in this country.

Directly, or indirectly, we are going to save the life of the workman. We are going to build him up; we are going to make him a better man—morally, mentally, and physically.

We secured a law in my State calling for guarding and protection of workers on metal polishing and buffing machinery. In one large establishment I found the superintendent busy installing devices that would comply with the law. About nine months afterward I visited the shop a second time and the superintendent took me through the polishing department. It would be a credit to any establishment in the world. I remarked on the cleanliness of things, and he said: "Yes, and it is good business as well. It cost this firm twelve hundred dollars to put in the new blowers and equipment." I said that was quite a sum to spend on one department. He answered: "Yes, but that is only a part of it. Previous to putting in this new service, a quantity of the metal dust was wasted. Since installing this device, we have saved four hundred dollars worth of dust. In two years the saving of dust will have paid for the cost and installation of this equipment."

He said that they would try hard to preserve the law now, even if it had no safety measure attached to it. Formerly the men working in establishments of this kind would go out and drench their systems with drink, because they believed it would counteract the effects of the dust and fumes they had to breathe. The superintendent said that since they had provided a decent place for the men to work in, excessive drinking had almost ceased. He said: "Formerly, I could get men to work only five days a week. Now they are working six. I am paying bigger wages and getting more work out of the men—they are living like civilized beings and are much pleased with the new system."

It had worked out in much the same way almost everywhere. We passed a measure that cost our employers seven and one-half million dollars in the first year of its operation and it has cost them more than that since then. It is generally called the "Health, Safety and Comfort Law of Illinois." I went into one of our establishments and talked with the employer. He said that the best paying investment in his entire shop was the safeguards he placed upon his machinery. He said that he was drawing in excess of twenty-four per cent. interest on the money he had put into safeguards. He would not be without them.

In addition to this, the men are saving for themselves thousands of dollars in loss of time. They are entitled to more wages than they had before. They are making their lives more worth while.

I believe in meeting the employer face to face. This is the only way we have a chance to discuss matters of mutual interest. Throughout the United States meetings similar to this are being held and are doing a world of good. Some of us are a bit impatient, and I can understand why we should be impatient. When my brother, the baker, arose and said he had worked in a basement room where the ceiling was only five feet high, I don't blame him for being impatient. When he said that he was now working in a building that had been condemned for eight years, I don't blame him for being impatient.

We are making progress. Impatience is giving way to progress. The spirit of pessimism is losing ground day by day and optimism is the spirit of the times. It is a good world. I thank you.

Mr. John A. Fitch, Associate Editor, The Survey, New York City, said:

I have been exceedingly interested in the safety movements that have been under way during the last few years, and I have followed with a considerable degree of attention, the work that some of the biggest industrial companies, notably the steel companies, have been doing in the last four or five years, along the line of protection and the elimination of hazards. I know of no more hopeful sign at the present time than the movement which is gathering headway among the companies themselves, which perhaps has received its best and heartiest expression in the National Council for Industrial Safety.

Of great significance, too, is the change that is coming about in the administration of labor laws. Three great States that border upon each other, have within a year, decided to reorganize their departments of labor in such a manner as to make them more effective in the work they have to do, not only in the way of accident prevention, but in all lines. I refer to the States of Pennsylvania, New York and Ohio, which have started upon similar lines of endeavor, and are following practically unbeaten paths.

Only one State has carried on an endeavor of this kind sufficiently long enough for us to be able to look to it for guidance, and that is the State of Wisconsin. I want to say just a word about the way in which Wisconsin is endeavoring to make its Industrial Commission effective in serving the interests of the manufacturers, employers and employees there. They have made their department no longer a police department solely; no longer is the factory inspector going out to "get the goods" on the employer,

to hale him before the court and shake the law and the penalty before him in order to make him do what is right. The Industrial Commission rather is co-operating with the employers and working men and bringing about a better condition and a better enforcement of the law because of that spirit. When they want to fix a standard; when they want to make a new rule for safety, sanitation and welfare, they do not sit down in their mahogany chairs and decide upon a rule and impose it upon the industries of the State. They appoint a committee of persons interested in the machine which is to be safeguarded, or in the condition to be improved. Upon that committee are laboring men who are working upon the machine and know the conditions to be met; upon it also are representatives of the employers who own the machine, and finally there are scientific experts. This committee gets together and talks to the people who will have to obey the law and those who will have to carry it into effect. They consider all the conditions and report back to the industrial Commission a rule to govern the situation. Then the Industrial Commission has a public hearing where all other employees, and all other employers, who have not before had a chance to speak, are invited to appear. After all this the commissioner decides upon the rule. Now, by having done that, they have brought about a spirit of co-operation and a desire to obey the law which I think has not been equalled in any other State.

This experience in Wisconsin suggests the opportunity that lies before us in these three States that have undertaken work along similar lines. There is nothing more promising, I think, than the suggestions which have been made here by manufacturers and laboring men. If there has seemed to be a feeling here that everything that could be done has not been done; if there is a spirit of resentment in any quarter, it is not unique. That spirit exists in every State in the Union and, Mr. Chairman, it is justified. I am reminded of what Ralph Richards of the Northwestern Railway Company said the other day before the Safety Congress. He told how, when he was organizing the employees of his road along safety lines he had said to them: "The directors are not the people who are getting killed, the president of the railroad is in a position of comparative safety, but you are the fellows who get hurt; it is your families that have to suffer, and it is up to you to make these conditions safe." It is the families of the working men in Pennsylvania, New York and Ohio who have been suffering and their resentment is not only righteous, it is a most hopeful sign. Because of it, they are going to be able to come before the Department of Labor and Industry of this State and tell what they need. Their suggestions will be practical, and with their help and that of the employers you are going to be able to do a great work in this State in the improvement of conditions of labor.

Mr. Thomas Ewing, National Tube Co., Pittsburgh, Pa., said:

There is one subject that has not been very much touched upon here, and which is one on which we are working more than any other subject. We have gone ahead for a good many years and guarded our machinery, and while we are still working on that subject, and are still guarding it, I think that is not the most important work we have before us. The principal subject of our safety work now is the elimination of dangerous practices, dangerous methods of work and all that sort of thing, and that is the subject that our safety inspectors, our safety committees and our safety department is working on mostly now. I want to say that we are getting most excellent results from it. We have adopted a rule that when the safety department, either of a mill or the general office, or any safety inspector, points out a dangerous method of work, or dangerous practice, the foreman, or the superintendent, no matter who it is, who is in charge of that work, has *got* to stop that dangerous practice simply because the recommendation is made, unless the man at the top, over his written signature, will say that is the only way of doing the work. In order to accomplish results we have *got* to do it that way. It strikes me that that is quite a development in the safety line. As I say, we are going right ahead with this guarding of machinery but our principal attention is devoted to the way the work is being done. In any plant, no matter whether large or small, if we find such an unsafe practice, we eliminate it, and if the safety committee, safety inspector, or anybody, notices it, or calls attention to it, the operating department has *got* to stop it, unless the manager, after a thorough investigation, is willing to certify over his signature that that is the only way of doing the work, and that it has to be done that way. Of course, you cannot eliminate all unsafe practices. If you did, you would not operate a mill. I believe that is one of the most important things in the safety line.

Mr. F. C. Henderschott, Educational Director, The N. Y. Edison Co., said:

Mr. Arthur Williams, President of the American Museum of Safety, was invited to be present this evening, but unfortunately he is President of an organization that is now holding a convention in Chicago. I would like to speak to you for a moment on what the American Museum of Safety is doing. Its business is exactly what its name would indicate,—the preservation of life and limb. During the past year, I have been somewhat closely identified with the

Museum of Safety principally as a substitute for Mr. Williams, who has had many requests, with which he has not been able to comply. The movement seems to have gained a very strong hold among the school children and nothing could be more encouraging. I believe that during the past year about seven hundred thousand have been reached through the schools of New York City, and to-morrow afternoon, I am going to visit a little village in northern New Jersey to speak in a school on the question of safety. It is only one of a great many trips which I am going to make.

I would like to speak to you for a moment, with your permission, on the closing remarks of Mr. Tener. He said that it would not be very long until we cease to have thrown upon the screen photographs of guards, designed to prevent accidents in industry, and the thought that he left with me was that that feature would be done away with through a campaign of education. I do not know how many of you realize that the total valuation of wealth in the United States is about one hundred and thirty billions of dollars, or about fifty billion dollars greater than Great Britain, and about seventy-five billion dollars greater than Germany, and about seventy billion dollars greater than France, or about as great as France and Germany combined. We occupy the most commanding position in industry of any nation in the world. We have been wasteful in our work in this country, and just as we realize how wasteful we have been, how little regard we have shown for the conservation of natural resources, the preservation of life and the many other things which are now commanding our serious attention, we are confronted with the statement of the statisticians that one-fifth of the progress of the world has been made in the last twenty-five years. What is going to happen in the next twenty-five years and how are we preparing to meet it? Industry has tried very earnestly to reconstruct itself to the new ideals that have crept into industry. In other words, I am of the opinion that we are passing from a period of competition into a period of co-operation in some form. The only results that are worth while, so far as I am able to ascertain, have come through two channels. These are proper forms of education and co-operation. Many of the large corporations have instituted what is known as the company school. These schools go back in one form and another for quite a good many years. The Browne & Sharpe Co., of Providence, R. I., started their apprenticeship school in 1857. The National Cash Register Company started its school for salesmen about eighteen years ago, but the movement did not gain much headway until two or three or four years ago. On the 24th of January was organized what is known as the National Association of Corporation Schools. It is a coming together, as you

have come together, for the purpose of learning, if possible, through exchange of experiences and through other avenues for gaining information, what can be done, what has been done, what has been successful and what has not been successful. Most of the corporation schools have post-graduate work. Forty-four of the corporations have joined in the movement and your great railroad system, the Pennsylvania, was a charter member.

We are trying to do just three things, first, to increase the efficiency of the individual employee in industry, through proper instruction. Don't get the idea that when an employee has taken these courses (and they are all designed according to the requirements of the various corporations) and graduates and gets a certificate, that he is through being educated. A man cannot stop educating himself at any time if he hopes to be any considerable factor in the future development of this country. Secondly, we are trying to raise the standard of efficiency in industry, and we are not trying to do it by speeding up, we are trying to do it by intelligent work. We are trying to do it by explaining to our men how their work should be done, with the least effort and the most efficiency. The third thing we are trying to do, is to reach down into industry and grasp those great truths which underlie it and bring them to the surface. We have got to learn. We have scarcely begun.

Recently, I was dubbed an efficiency expert. I was asked to make an address in a town not far out of New York, and I was introduced as one of the efficiency experts of the New York Edison Company. The aim has been to keep efficiency experts out of the New York Edison Company. None of us knew what we were there for, or what we could do. We had a number of pessimistic members there and one of them said, "I don't think Moses made very much success of his pilgrimage through the wilderness," but we had an optimistic member with us and he said, "Solomon was fairly efficient along certain lines;" and we agreed upon it. I am still of the opinion that efficiency consists of two things,—proper education, proper instruction to the man as to what he is to do, and co-operation. Co-operation comes largely as a result of enthusiasm, and as enthusiasm is always based on knowledge, the more knowledge you can get to every member of your organization, the higher you can raise the man above the dollar, and the less you have to worry about it. That is what we are trying to do. We are not trying to solve any of the other great problems. We are trying to bring into industry, a school system in harmony with other forms of education, and after we have educated as to real efficiency, we shall feel we have done a great work. Our Company has told me that I could have all the appropriation I wanted for the building of new school rooms. In

other corporations, we find the employees not only anxious, willing, and earnest to meet the company half way, but in some corporations movements have sprung up through the employees themselves, and were later financed by the company. Very often, you will find a boy who either did not realize the value of education, or who is forced to go to work to sustain the family. Very often he finds himself married, with a child or two and at the age of twenty-two to twenty-six, he realizes that he is handicapped. He knows that there is just one way to overcome that handicap, and that is to go back and lay the foundation. The corporation school offers the opportunity for that boy to go ahead and lay the foundation. It holds out a hope to that boy, and if you study these corporations that are carrying on this work, you will find that they have as teachers the very best authorities in the country. I would like to leave with you the thought that the great corporations are endeavoring in every way to uplift their employees.

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Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

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PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

Richard M. Pennock is Chief of the Division of Accident Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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REPORT OF THE SECOND ANNUAL CONVENTION OF THE AMERICAN ASSOCIATION OF PUBLIC EMPLOYMENT OFFICES.

MRS. SAMUEL SEMPLE, Pennsylvania Industrial Board.

Upon invitation of the Governor of Indiana, the annual meeting of the American Association of Public Employment Offices was held in the Chamber of the House of Representatives in the Capitol, in Indianapolis, September 24th and 25th, 1914. The President, Mr. F. C. Croxton, of Ohio; the Vice-President, Mr. Joseph V. Cunningham, of Michigan, and the Secretary-Treasurer, Mr. William M. Leiserson, of Wisconsin, were present and in service. Eleven states, the District of Columbia, and the Dominion of Canada reported at the opening session, and other delegates arrived later. At no session did the attendance number over fifty; but probably twice that number were included in the total registration. The importance of the gathering was not measured by its size; for it represented one of the early stages of an attempt to consider and handle the great problem of unemployment from a national standpoint. The intrinsic importance of the occasion was recognized by Governor Ralston of Indiana, who appeared in person, and welcomed the convention in gracious and humorous words, which closed with serious tribute to the work in hand.

The opening session was devoted to the presentation of reports from delegates on labor conditions in their own States or cities. The territory covered ran from Massachusetts to Oklahoma, but most fully represented the Northern Central states and Middle West. Massachusetts was reported as having comparatively little unemployment; and in Oklahoma the situation was depicted as almost ideal, except in the oil fields, where conditions are unsettled, though so recently as to have caused very little suffering as yet. With these two exceptions, the conditions described in the other states were alike—many out of employment; mills and factories running on reduced time; railroad construction lessened, and train service cut; building trades much reduced; shipping at a standstill, with consequent demoralization of employment for longshoremen. A certain degree of adjustment to present conditions was indicated in the fairly general statement that a slight betterment had set in. Interesting exceptions to the general gloom were the facts that the demands for domestic help still outrun the supply and that, to escape the derangement of the trades, the movement is "back to the

farm." This movement has, in some cases, been practically created by the public employment agencies; and in all cases they have fostered it, though faced by the difficulty of low wages, and often poor living conditions, on the farms. Wherever an attempt had been made to handle farm labor the feeling was strong that the first need is to educate the farm employer to care for his men more adequately, and to pay a better wage. If this could be done it would, from the employment agency side reduce the situation to sending farm men back to the farms, or inducing foreigners coming from agricultural life abroad to go to farms in this country rather than to remain in the cities where they land. In parts of Ohio the wages for summer farm labor were reported as $1.25 to $1.50 per day, sometimes with, and sometimes without board; during corn harvest the price was six cents per shock, without board; and all-the-year labor was offered $16.00 to $18.00 per month. At this price it is difficult to supply farm labor. It was stated that the present demand is for $20.00 to $25.00 per month; while in Wisconsin it was reported that the endeavor is to push wages to $30.00 to $40.00 per month, with board. Wisconsin plans to add to its state officials a Superintendent of Farm Employment. Missouri reported systematic attention to farm employment. In the month of June of this year ninety per cent of the 13,000 positions secured by public employment offices of that state for applicants were on farms. The Missouri Department of Labor co-operates with the State Board of Agriculture in this work. In many ways the most remarkable story of the convention was that told by W. G. Ashton, Assistant Commissioner of Labor of Oklahoma, concerning the work done by his department in organizing the farm labor market in his state. Representatives of the Department make a survey of the labor needs of the rural districts as harvest time approaches, securing estimates from the farmers themselves in each county of the number of laborers they will need; and the department gathers those laborers within and without the state, seeing that they are delivered to their destinations by the time the wheat harvest opens. As a rule, the farmers are glad to have them arrive in advance, that they may help with the hay, or with other farm work that presses. The preliminary time is paid for at ordinary farm wages, while special prices prevail for the wheat harvest itself. So handled, the great army of harvesters, 20,000 in Oklahoma, move northward with the harvest, to make part of the 40,000 needed in Kansas, and of the 60,000 which handle the wheat in the Dakotas. While several of the delegates advocated systems of bulletins, similar to those of the weather bureau, for securing the supply of labor needed, Mr. Ashton opposed this, as too slow and too uncertain, owing to the frequent failure to remove bulletins

when they have served their purpose. His preference is for use of the press, in general statement, and in up-to-date advertising. His view is that co-operation between states of like agricultural interests is necessary to complete organization of the farm labor market. Mr. Ashton was also most emphatic that it is the duty of State Departments of Labor to undertake this work of organization of the farm labor market. Only so, at present, can the agricultural needs be met fully. Moreover, if such organization is left—as in most states it is—to the railroads and to private agencies, the farm help secured is largely of inferior quality; and the farmer secures even that at the cost to society of the manufacture of tramps, hoboes, and bums, plus the innumerable accidents which result from stolen railway transportation. Mr. Ashton advocates the employment by States of special field agents to keep watch upon the needs of the rural labor market.

In the urban industrial fields an interesting unanimity of expectation of a bad winter was manifested. Wisconsin, through its Industrial Commissioner, Mr. Beck, reported a tendency in that state to protect labor by effecting economies first in the managerial department of large concerns. Many firms are cutting large salaries as much as thirty per cent, clerical salaries about fifteen per cent, leaving labor wages practically untouched. Several cities reported municipal work undertaken at this time with a view to relieving labor conditions, resident men with families being given first privilege of registering for such employment. The most complete system of this sort was apparently that instituted in Toronto as an emergency measure necessitated by Canadian connection with the European War. A Citizen's Committee, co-operating with the city and federal governments raised a fund of $1,000,000 for employment relief work. Winnipeg and Alberta have already followed the example of Toronto. The work done has been so satisfactory, and such a benefit to the city that at the coming session of the Canadian Parliament it is expected that legislation will be enacted that will put the system on a permanent basis, and extend it to the whole Dominion, with a clearing house at Ottawa. The attitude throughout is that this is government work, and in no sense charity. The general scheme is modelled after the English plan with adaptation to Canadian conditions.

The general impression created by the reports was that economic pressure is at present felt most keenly in the large cities; and that prosperity is in inverse proportion at the present time to the population. Mr. Charles B. Barnes, member of the special United States Commission on Industrial Relations, confirmed this from his observation during a recent trip through the Central States and those

of the Middle West. His interest in that trip was primarily in the condition of the public employment offices; but he incidentally arrived at the conclusion that the smaller cities are suffering least, and that one of the great needs of the labor situation at the present time is better farm wages.

Mr. Barnes threw a bomb into the convention by his formal discussion of public employment offices. He began with a presentation of their history, going back to their first establishment in Ohio, about 1890. They were created in the recognition of the fact that private employment agencies constitute an economic loss, since they waste the time of both employer and would-be employed. He charged the existing systems of such offices with inefficiency, manifested in a lack of proper records and follow-up work. It is estimated that they fill sixty per cent of positions they handle; but exact statistics are lacking. He also charged that such offices cater largely to casual labor, and that thereby they encourage such labor at the expense of the higher grades, who find the public offices not suitable for their needs. He quoted private agencies as testifying that the public agencies are not their rivals, but relieve them of undesirables. He believes that the public agencies have, in general, not lessened exploitation of labor by private agencies; where this has been accomplished, it has been by legislation. Of the public agencies in general, he stated that they are poorly housed (in basements, or on second floors); labor is not handled in classified groups; little advertising or advance work is undertaken; there is no system of exchanging information, and entire lack of uniformity of records; and among superintendents, there is a general lack of activity and knowledge of labor conditions. Mr. Barnes placed the responsibility first on the system of "political plum appointments." He advocated civil service competitive examination, with examinations germane to the business. He scored the general belief that for this work no special training is necessary; and deplored the low estimation in which the business of running even a private employment agency is held. He charged that the attitude of organized labor toward public employment agencies, while on the surface friendly, is in reality that of "mild contempt and considerable suspicion," so that application to such agencies is made only is cases of dire need. Union labor suspects such agencies of furnishing strike-breakers; and, on the other hand, employers are suspicious of the public employment agency, especially if its head is known as a labor man. Mr. Barnes maintained that the public agencies suffer from insufficient appropriations, and from the trap of the desire to present reports as to low price per placement. He then presented a list of remedies for these conditions that he believed would meet them. The first requisite is a good law,

general in principle, but flexible in detail, and establishing civil service throughout the system, from top to bottom. Salaries should be flexible, depending upon service, with advance possible to such a degree as to induce capable men to adopt this as a life vocation. There should be strict impartiality in service as to employer and employed. To secure this, Mr. Barnes recommends an Advisory or Co-operative Committee, made up of representatives from the general public and various organizations. This would bring about a general understanding of the work, secure better appropriations, and a better class of managers. Such public offices should be located in cities offering municipal aid for their running, which would help to combat the rural prejudice that general taxation was used for city work. Absolutely free service should be given to those seeking employment. There should be reporting; adequate advertising; good and convenient housing; separate departments for different classes of labor and for men and women; hours suited to the needs of both employer and employed; sufficient office force and an independent superintendent free from office details, whose duty should be to keep in touch with the labor market and impending changes, and to arrange follow-up work to determine the efficiency of the office, and to plan for addresses and other public presentations on employment.

The civil service position taken by Mr. Barnes was also maintained by Mr. Houk, Commissioner of Labor for Minnesota, who held that a public employment office should not be run by worn out politicians or by worn out workmen; it should not be simply an additional employment office—it should organize the labor market; it should not be a resort for the lowest grade of workers, but a clearing house for the labor market; it should not serve merely its own locality; it should not go on in ignorance of work accomplished, but should follow up its patrons to see how many actually obtain work. To avoid these pitfalls, Mr. Houk held that such offices must be free from outside influence either of political or labor interests and that they must be run entirely on the merit system.

The "Principles and Policies Underlying the Successful, and Efficient Administration of Public Employment Offices" were discussed by Mr. F. C. Croxton, of Ohio, the President of the Convention. The employment office exists for the purpose of bringing together the man who wants work, and the man who wants help. To be successful, the public employment office must prove that it is the most efficient means of accomplishing this. It does not dispense charity, and must not assign a man to a job merely because he needs it, but because he can do it. A successful public office is the only efficient means of regulating the private employment offices. It must be fair to both employer and employed; must give full information,

including that as to strikes where they exist; should make special arrangements for the less efficient laborers; should arrange for vocational guidance for the young; and above all it should not "play politics."

Private employment agencies of the best and most efficient type were described in a paper presented by Mr. A. J. Allen of Indianapolis, Secretary of the Metal Trades Association, a highly specialized private employment bureau operated by the employers in the metal trades, and national in its scope. Mr. Allen presented these offices of his association as "neutral intermediaries" whose object is to "humanize industry and balance business." In his opinion good private employment bureaus are better than public ones, because of the elimination of politics, because they are not flooded with such a diversity of applicants, and because they can make more rigorous investigations. In response to the query as to whether or not such private agencies maintain blacklists, Mr. Allen replied that they do not, but admitted that they would not knowingly place men who are considered trouble makers.

Mr. Leiserson, the Secretary-Treasurer of the Convention, stated that he had invited Mr. Allen as the representative of the best type of private agency in existence to present his view of the case in order that he (Mr. Leiserson) might make his objection to all private agencies in the open, and upon perfectly fair grounds. Even Mr. Allen admitted the need of legislation to regulate such private agencies; Mr. Leiserson advocated their eventual entire elimination. He believes that a national system of labor exchanges, organized by states is the present day need; and feels that such a system should be provided under the Bureau of Labor. Civil service administration throughout, to raise the standard of the business, he deemed indispensable. States co-operating with the national government to work out the system, and the creation of the office of State Superintendent of such exchanges, and of supervisors to help their development more locally were needs that Mr. Leiserson emphasized.

The most insistent charges against private employment agencies came from the State of Missouri, where the Commissioner of Labor, Mr. Fitzpatrick, and his first assistant, Mr. Barrett, have been investigating these business enterprises. Mr. Barrett, who had made many of the investigations in person, denounced the private employment agencies as constituting in general an evil and a menace. He had found many employers, or their foremen, using them as a source of graft. Many teachers' agencies came under the most severe condemnation; so-called schools of domestic science sometimes proved, on investigation, to be nothing but poorly masked and dishonestly conducted employment bureaus; theatrical agencies he had

found to be the worst of all, and were characterized as frequently the avenue of approach to the white slave trade. Aside from these extreme charges, the practices of split fees and continuous percentages were noted as abuses. It is the contention of the Missouri Commissioners of Labor that as a class, private employment agencies live by extortion and dishonesty; that regulation is never successful; and that abolition is the only remedy.

As opposed to this view, Mr. Hammond, Vice Chairman of the Industrial Commission of Ohio, held that private agencies are better than none, and that in the present lack of development of State and National labor exchanges, we must depend upon carefully regulated private agencies for a needed service to society. In the way of regulation Mr. Hammond recommends small and uniform booking fees, with refund provision for failure of service, and requirement as to greater care in character of positions handled. Ohio requires private employment agencies to give bond, and the next Legislature is to be asked to give legal basis for suing on such bond. It is expected that this will make the bonding firms more careful, and will help to regulate the private agencies. Ohio has also a special supervisor for these agencies.

Labor exchanges for women were discussed by Mrs. Atwood, of Duluth, Minn., who spoke from experience in that line. She believes that such work is more complicated than similar service for men, and that it must be conducted more from the point of view of social service and of regard for the individual. Her own work in Duluth is backed by a public welfare committee, and is under the city government. Labor exchanges for women in small towns and in the rural communities she believes would be a great protective measure.

Mr. Walter L. Sears, long connected with the municipal employment agency of Boston, and recently removed to New York, a pioneer in the work of bringing the State into organization of the labor market, presented his belief that the whole problem of employment is really that of the distribution of labor, with the attendant question of transportation. This distribution must be managed so as not to flood the local labor market; neither must labor be kept out in order to raise wages. Care must be exercised not to paternalize labor; information, not material relief, should be given. Mr. Sears believes the Federal Government the proper agent to accomplish this, and also that special legislation is not needed—only an appropriation under the existing Department of Labor—since the Act of 1907 already provides for a Department of Information. Mr. Sears advocated the bulletin system, based on a need of five hundred workers, in handling the labor market, and cited the use

of such bulletins after the Salem fire. So successful was the system then that the emergency camp was closed in five weeks.

Hon. Royal Meeker, Commissioner of Labor Statistics, Department of Labor, Washington, presented a most interesting discussion of the "Relation of the Public Employment Office to the Problem of Unemployment." Co-operation to secure a continuous and continent-wide census of unemployment he stated as the first need. Arrangements for that can be best made by state agencies, through letters to trade unions, chambers of commerce, employers' associations, and all other promising avenues. Such a census should be at least monthly, and would even then be imperfect. New York has already offered co-operation for such work, and the American Federation of Labor has been approached as to its willingness to help. Preliminary to such effort Dr. Meeker suggested that it may be necessary to agree first upon a definition of unemployment; since that term is not the same as idleness. The Federal Bureau of Labor, Dr. Meeker believes, should concern itself primarily with statistics—finding out first how many jobs there are in the country; second, what wages are paid in them; third, what hours they require. We need to know what labor is to be performed, and how it is distributed. The Federal Labor Bureau should not usurp employment office work. Upon the accuracy of its statistics will depend the general insurance against unemployment. Discussion of Dr. Meeker's paper brought out the fact that police departments are not the proper agencies for securing statistics on unemployment; that uniformity of methods in different states is desirable; and that the house to house survey as used in Toronto is efficient.

The closing session was devoted to a discussion of certain tentative proposals for legislation on the matter of public and private employment offices as prepared under the care of the United States Commission on Industrial Relations. The scheme there outlined, changed in some particulars by suggestions already received, and by some made at the Convention, will be the basis of legislation sought from the next Congress.

The Convention took action in the way of creating a committee on uniform system of public employment offices and records; it went on record as favoring ultimate elimination of private employment agencies, and prepared itself to present a resolution to the Industrial Relations Commission, and to Congress, recommending legislation in separate states looking to the creation of public agencies; and it put itself on record as in favor of recommending to the Federal Government a definite plan for a system of such agencies.

Pennsylvania presented from its Department of Labor and Industry an invitation that the next convention of the Association

should be held in Harrisburg; but it was decided by the Committee on Place to meet next year in Detroit.

In summing up the Convention, it may be said that it left certain definite impressions. The first of these is that the matter of unemployment is one of the most important economic problems of the day, and that it threatens for the immediate future to become acute. Second, the only reasonable protection against unemployment is the organization of the labor market for the avowed purpose of bringing together the "jobless man and the manless job." Third, the State, as opposed to the private individual, seems to be the proper agent for performing this service to society. Fourth, the merit system in appointment seems to have made itself felt as the best guarantee that this service on the part of the State shall most surely be fulfilled.

ACCIDENT PREVENTION.*

Mr. David Van Schaack, Director of the Bureau of Inspection and Accident Prevention, Aetna Life Insurance Co.

"Mr. Chairman, Ladies and Gentlemen: I hesitate to discuss the subject of accident prevention before you because I know that much of what I shall say has already been said by others better qualified than I am to speak upon this subject. At the same time I think that in connection with a matter of such deep concern to us all there cannot be too much reiteration of the essential points. How deep that concern really is, has only recently come to be at all generally appreciated. Dr. Hoffman has told you about our annual industrial accident record, the great number of deaths and injuries. Such a record is not only shocking to our moral sense, but is a grave reflection upon our economic wisdom.

From the moral and the humanitarian standpoint, the prevention of preventable accidents is not an altruistic favor to anyone. To eliminate pain suffered by injured men and their possible lessened enjoyment of life, to reduce sorrow felt by the people of those killed or badly hurt, to diminish the misery of the world, is a plain duty which admits of no argument. It is simple justice.

Viewed from the economic side, whether broadly or narrowly, the necessity for accident prevention should be just as evident.

*Part of the proceedings of the First Pennsylvania Industrial Welfare and Efficiency Conference held at Harrisburg, October, 1913.

The brains and brawn of a nation are its greatest asset, far greater than any of the material resources which we are now so carefully conserving. Any drain upon this asset is a calamity, any avoidable dissipation of it, a crime.

Industrial accidents mean a distinct decrease in the productive power of the community, future as well as present. Besides destroying or curtailing the working capacity of the injured men themselves, they result in loss of educational opportunity to the next generation, and consequently in its lessened usefulness throughout life.

They are also a drain upon the wealth already created. The money which is paid out in compensation or damages, great as it is in the aggregate, is only a part of this drain, I might say, but a small part. When a workman is thus withdrawn from the wage-earning class, there are, sooner or later, many other calls upon accumulated funds. The economic balance in the workman's home is disturbed. There is medical expense; possibly, the cost of hospital care; possibly too, the expense of litigation. The injured man may have to be supported in his old age. It may be necessary to care for dependents. In one way or another, there is sure to be a demand that the loss caused by the worker's inability to continue doing his full part in the world's work be made up. It is immaterial how this demand is met, whether by the worker's own savings, by mutual benefit associations, by insurance, by public or private charity, by taxation; it is economic waste.

The waste due to industrial accidents is evident, too, in another way, which comes closer home to the employer who stops to consider what accidents cost him, or the consumer through him. This is in the diminished efficiency of the plant.

The occurrence of an accident distracts other workers in the vicinity, stopping their productivity for the moment at least and curtailing it for some time. If the accident has distressing features, it may be days before those who saw or heard of it regain their normal rate of working speed. Frequently there is a complete stoppage of work on account of an accident.

Then, there is the loss due to the disability of the injured employee, the diminished productiveness while the place of one temporarily disabled is held open for him or a new man is being trained to take the place of one permanently disabled; the time which a foreman or other worker has to take from other productive employment in order to give such training; the defective work which a new hand turns out; the scrap loss which he often causes.

All such interferences with the ordinary course of a plant's work, cause a loss of efficiency which is distinctly measurable in cold dollars and cents. An idle machine, or one not working to its full capacity, is an expensive luxury. Moreover, the overhead expenses

of the plant are running on just the same, but without the same degree of offset as if the accident had not occurred. One manufacturer told me some time ago that within a year there were 2,100 days of absence on the part of his machine hands, and that each of these days meant a loss of $7.50 to the concern, a total of $15,750.

In view of all the considerations outlined, the *why* of accident prevention should be clearly evident; the *how* is another matter.

To begin at the beginning, the success of accident prevention work depends, in the first instance, on the attitude of the employer, and his chief lieutenants. If they are not keenly interested in the matter, very little can be accomplished.

With the management once convinced, and it is hard to see how they can not help being convinced, that accidents must be reduced, the initial step is organization. I believe that the chief reason for our national backwardness in this important work, aside from our absorption in material development, is that what is anybody's business or everybody's business is pretty sure to be nobody's business. To use a slang phrase, the prevention of accidents has been too much a case of "Let George do it."

It is the experience of every large industrial concern, as well as of all other agencies which have taken an active interest in preventing accidents, that if a successful safety campaign is to be waged, a comprehensive organization to formulate and carry out a definite plan or program for such a campaign, is absolutely essential.

The necessity for organization in safety work is apparent when we consider that a many-sided problem is involved in accident prevention. Broadly speaking, it may be said to include as its chief branches:

First, ascertaining the actual conditions of risk under which employees in any one plant perform each task, and determining the practical possibilities of eliminating or reducing this risk.

Second, the provision of proper working conditions, and of efficient safeguards for dangerous machinery and appliances;

Third, careful selection, instruction and supervision of workmen, and the assignment of them to work for which they are not unsuited;

Fourth, the promulgation of rules for safe working, and their rigid enforcement, and

Fifth, the inculcation of habits of caution in the minds of all concerned.

It takes only a few words to outline this program, but it is a mighty big task to carry it into anything like full effect; a task requiring not only scientific investigation of the causes of accidents and careful assignment of the work of eliminating these causes, but co-operation all along the line, and education from top to bottom.

Only through organization can this be done in a manner which will get real results, which will not only find out what can and should be done, but will adopt the best way of doing it, will bring engineering training to bear upon mechanical problems, and will unite all the necessary factors of agency in the teamwork,—that cordial pull-together, which is so vitally essential to success in any line of effort depending upon more than a single man. Only through organization can the plant problem be seen as a whole, so that safety work will help, and not hinder, the work of the shop.

Perhaps the most notably effective system of organization in safety work is that adopted by the subsidiary companies of the United States Steel Corporation, which, through their safety committees, central, plant, foremen's and workmen's, have brought officials, superintendents, master mechanics, safety inspectors, foremen and men together in a comprehensive campaign.

The same sort of organization is not possible, of course, in all industrial concerns, but, no matter how small a plant may be, there can be some organization, some planning of work and then working of plan, some one competent man, if no more, whose *business* it is to see at least that dangerous places and machinery are guarded and the guards maintained, and that workmen are urged to use the guards provided and otherwise to do their work as safely as possible.

Time will not permit of dealing in detail with each of the chief branches of accident prevention work mentioned, but, before emphasizing one or two, I want to make passing reference to others. One of them is the provision of proper working conditions. These include, among many other things, the furnishing of an adequate supply of properly distributed light, keeping a mill well cleaned up and orderly arranged, and seeing that structure, machinery, tools and other appliances are always in proper shape. Regular inspection of all structures and equipment will prevent many accidents by discovering in time dangerous conditions which eventually would surely cause injuries. Needless to say, it is equally conducive to economical operation. So, too, are neat surroundings, which exert a considerable influence in making workmen both more cautious and more efficient. The same may be said of good ventilation, up-to-date sanitary conditions, everything in fact which contributes to the worker's well-being. The importance of proper working conditions in accident prevention is too often underestimated.

Just a word about rules for safe working. They are a mighty good thing—*if* they are thoroughly practical and every one of them is rigidly enforced. Overlooking violations of a single rule in a set, lessens the force of all the others. It is like the weak link in the chain.

Workmen can well be selected for their caution as well as for their ability to do work. A reckless employee, no matter how skilled he may be, costs his employer more money than he is worth. Every workman should be carefully instructed in his work, not only in how to get results, but in how to avoid danger to himself and others. The stitch in time adage applies nowhere better than here. In assigning a man to work, and in keeping him at it, his personal characteristics should always be duly considered. Both efficiency and safety are endangered when a heavy, slow-thinking man is on a job requiring mental alertness and bodily agility.

Coming to safeguards proper, safety devices as they are commonly called, the providing of them comes early in a safety campaign, and deservedly so. We have passed the day of thinking that all preventable accidents can be prevented by safeguards, but their field is a very important one. They will prevent a great many of the more serious accidents, and they will often lessen the seriousness of those which they cannot wholly avert.

Another very important function of safeguards, is that of impressing upon the employee the sincerity of the employer in his desire to prevent accidents. He cannot consistently ask the workman to do his share in accident prevention unless he is doing his own. Spending money, however, in a way which the employee cannot help seeing will work to his benefit, is the best sort of guarantee of good faith.

Safeguards are also often a great aid in promoting efficiency. There are many instances where they increase the product. Every workman spends part of his time protecting himself against injury. In some extreme cases this part is as much as nine-tenths of the total. The safer conditions are made, the more the workman's time can be devoted to turning out product.

In the providing of safeguards, the matter of their design is of the utmost importance. Not only must they be really guards—not traps posing as guards—but they should be such that the workman will have as little temptation as possible to remove them. They should not be cumbersome, they should not make the operation of machines any more difficult and they should not permanently reduce production.

Speaking of the safeguarding of machinery, very much indeed can be done to promote safety in the designing of machinery and its equipment with guards at the time of its manufacture. Not only can safeguarding often be done better then, but it can be done more cheaply. When a machine is built without safeguards, either in fact or in mind, it is sometimes impossible to provide effective guards for gears and other dangerous moving parts because of lack of clear-

ance; whereas slight changes in the original design would have made good guards possible, and they could have been provided at practically a negligible cost.

Most makers of machinery will supply guards if the purchaser wants them; in fact many are now furnishing them as standard features of machines, and it is encouraging to note the increasing number of purchasers who are not only including requirements for guards in their orders, but are printing on the letterheads of their purchasing departments statements to the effect that provisions for safeguarding workmen should be brought to their attention, as such will be taken into account in placing orders for new machinery and equipment. Where the machinery is built in your own plant, the same object can be attained by having the designs checked over for safety.

To illustrate how seriously the safeguarding part of the accident prevention problem can be, and has been approached, I am going to run through a few pictures which I hope will prove of interest. They show chiefly guards of home manufacture, and some of them, doubtless, one or another of you will recognize. I wish I could spare the time to acknowledge the courtesy of the individual source from which each came.

(Mr. Van Schaak showed the following slides:

Guards around fly wheels and condenser pump in mine engine house; also a railing and stairway to pillow block and shield for the crank.

Lifting screen guard for a flywheel where there is no room for a fixed guard.

Elaborate system of giving approach to overhead shafting.

A motor guarded by pipe railing and mesh and slanting drive belt running in a trough of reinforced mesh.

Elevator gate built both high and low enough.

Simple railing to prevent men approaching a railroad track and being run over by a car which they cannot see until it is close to them

A big wood planer fenced in with wire mesh screens and angle iron frames.

A swing saw guarded.

A band saw guarded.

Automatic pierced aluminum guard for a jointer.

Shafting and gearing of roller tables in a steel mill protected; also a railed bridge for crossing the rolls in safety.

Guarded overhead traveling crane.

Completely guarded locomotive crane.

The sort of foundrymen's shoes and pants which will prevent many accidents, sold to workers by the management of some plants at cost.

Shows what goggles do. Nearly a hundred pairs turned in in damaged condition and not a man who was wearing them injured.

How tumbling barrels in a foundry are sometimes guarded.

Tumbling barrels unguarded and guarded.

A push feed for a re-drawing operation with a punch press.

Another safe method of feeding where the work is brought into proper position by the descending ram.

A punch press safety device to prevent the clutch engaging while the operator's hand is in the danger zone.

A two-hand feeding arrangement for a punch press.

Hand guard for punch press; open.

Spindle gears on a drill press guarded.

Bench drill presses run by girls with spindles and spindle belts guarded, with metal shields for the girls' skirts, and with machines set back to keep the driving gear between the tables.

A hand miller with an adjustable guard for the cutter; the belt and pulley shielded; and a safety latch to hold the head up.

Guarding of grinding wheels, showing safety flanges, hoods arranged so as also to protect the arbor end; plate glass shields to protect the eyes, and the belt enclosed.

Heavy round bar stock piled so as to prevent accidents; incidentally to economize space.

Portable ladder with pivoted feet.)

When we come to consider the inculcation of habits of caution as a means of accident prevention, we reach the most difficult, and at the same time, the most important part of the problem. The several means already touched upon can accomplish a great deal, but any accident prevention campaign must fail largely in its purpose unless the co-operation of the workmen themselves is secured. As a great safety leader recently said, safety men are far more important than safety things.

Some of this co-operation can be obtained through the right sort of foremen; men who are both imbued with ideas of caution and who are strict disciplinarians. The foreman is apt to be looked up to as a sort of leader by the men under him, and they are more easily influenced by him than by those higher up in the organization. In a sense they consider him as one of themselves, a man who has been through the same experiences they are undergoing. He is closer to the workmen in every way than anyone else in the plant can be, and by a combination of moral suasion and discipline he can help prevent many accidents which are otherwise difficult, if not impossible, to prevent, such, for instance, as those due to the removal of safeguards, to horse play, and to the wearing of unsuitable clothing.

Incidentally, he can also be of the greatest service in the determination of the exact cause of each accident with a view to avoiding recurrence.

The foreman is such an essential factor in accident prevention that his active aid must be secured. A long step toward securing it is taken when it is impressed upon him that he will be held personally responsible for the prevention of accidents as well as for the doing of the work, and that his success in each will be duly taken into account, by a bonus system or in some other way.

The foreman cannot do it all, however. He cannot make men over again, nor can he watch each workman all the time to see that he does none of the innumerable things which, whether they originate from ignorance, from thoughtlessness, or from fool-hardiness, are constantly placing men unnecessarily in danger of injury. Despite all that a foreman can do, workmen will wipe machines while they are in motion, they will leave parts of their bodies under heavy pieces that are being hoisted, they will brush chips from under revolving cutters with their fingers, they will take short cuts through dangerous places, they will start to drill without securely fastening the work—in fact the list of what they will do in spite of any precaution is practically endless.

(Mr. Van Schaak showed the following dangerous practice slides:

A workman riding on the loose coupling bar of a locomotive crane.

One result of such a practice.

Sitting on locomotive crane platform in danger of being crushed between tank and platform.

Unsuitable clothing for a foundryman taking off a heat. What happens to a cotton shirt and hat.

Pouring a mold with foot and leg directly under the ladle.

How not to carry a hand ladle. Man is also wearing the objectionable cotton gloves.

Looking directly into the riser of a mold while it is being poured.

Dangerous way of piling flasks.

Unsafe way of hitching a sling on the trunnion of a flask.

Improper way of hooking up flasks.

Riding on material being moved by a crane.

The dangerous and unnecessary practice of coupling air hose between moving cars.

Jumping off engine footboard backwards).

The only possible way of preventing accidents due to such causes is to secure the willing and active co-operation of the workmen themselves, by interesting them in safety for both themselves and others, by inculcating habits of caution in them.

One of the most effective means of bringing this about is to have the men serve on such safety committees as I have mentioned, which go about the plant once a week or month, looking for dangerous places, and the means of guarding them, seeing if the safeguards provided are always used, and observing if the workmen are doing their work as safely as possible. This not only results in better safeguarding and working methods, for in many respects no one knows so well as the workmen themselves what is really needed to prevent accidents, but it also greatly stimulates the interest of the men in safety. The personnel of these committees is changed from time to time, so as to get the widest range of suggestions and to bring as many men as possible within this sphere of influence, and each man who has served on a committee is urged to consider himself an unofficial safety inspector ever afterward, keeping up his active interest and making any suggestions that may occur to him.

While the safety committee is one of the most notable among the methods employed to secure the co-operation of the workmen, many other means of arousing their interest, and keeping it aroused, have been found effective. Among these are such things as signs at employment bureaus to the effect that only careful men are wanted, signs at entrances to works urging caution and safety practices, safety slogans, little sermonettes of safety, printed on the backs of pay envelopes, on slips attached to pay checks, and on time records and other forms largely used in mills, supplying paperweights bearing safety symbols and catchy phrases tending to keep safety uppermost in the mind of foremen and other employees having desks, distributing cigars bearing bands with safety emblems and safety slogans on them, furnishing for general wear or as badges of distinction, safety buttons having on them striking color design and some such wording as "Safety First," "Boost for Safety," or "Get the Safety Habit," using safety bulletin boards to show how accidents happen and how they can be avoided, and the giving of safety entertainments.

All these methods of enlisting the co-operation of the workmen have proved to be very effective and have done a great deal to reduce the number of accidents which are otherwise unavoidable; but even they leave much to be done. We shall never attain the highest possible measure of accident prevention until we have a body of workmen in this country who from the very time they begin to work are firm believers in safety.

The man who has been working at his trade for years is set in his ways and intolerant of change. He clings to his trade practice like the nobleman of old to his honor. Not only does he instinctively object to any variation from the working methods which he learned in his youth, but in many cases he is firmly convinced that any departure

from reckless ways would cause him to lose caste among his fellows. There are many thousands of these men, whom no safety campaign will influence in the slightest degree and whose opposition to change also has an unfortunate effect upon others who, but for their attitude, might be properly influenced.

Though these men cannot be changed, they will ultimately be replaced by a new generation, and this new generation can and should be made very different from them. One of the greatest fields for productive safety work is among the workmen of the future, through systematic education in safety. This education can well be given, not only to apprentices in our shops, but in the industrial schools, in the training departments of our great industrial establishments, in the vocational schools, in the manual training departments of our public schools, and, to some extent possibly, even in the ordinary school classes. If habits of caution are inculcated in our future workmen during the formative period of youth, when they are most inclined to be receptive, they will cling to them throughout life.

This education of the rising generation of workmen is looking well toward the future. It will be a slow process, and the beneficial results of it will become manifest only by degrees and in the course of time but eventually it cannot fail to have far-reaching effect upon the measure of accident prevention attainable. It will produce a steadily increasing number of workmen who, not only will tolerate safeguards and will cheerfully use them, but who, from force of habit, will be addicted to safe methods of working.

I wish I could spare the time to show you some figures illustrating what has been done in accident prevention by such companies as the United States Steel Corporation, the International Harvester Company, the Pennsylvania Railroad Company, the New York Central and Hudson River Railroad Company, Fairbanks-Morse and Company, and many others. They show what can be accomplished by earnest and organized safety work.

These are but a few examples of what is being done by many industrial concerns, and they are increasing in number every day. In accident prevention, we are getting away from the heedlessness of our youth as a nation; we are awakening to a realizing sense of what a shocking waste industrial accidents are, and our privilege and duty in reducing them to the smallest possible number.

I use the words privilege and duty advisedly, for while I have no doubt that there are instances where the force of the law was required to awaken us, and where the additional stimulus of mercenary interest was necessary to spur us on, I believe that back of the whole movement is an increasing spirit of right-mindedness, a spirit which, through organization, co-operation and education, is working a wonderful change in our industrial conditions.

THE SAFETY MOVEMENT.*

DR. LUCIEN W. CHANEY, Dept. of Labor, Washington, D. C.

Somewhere not long ago I saw those engaged in efforts at social betterment divided in three classes, social reformers, social leaders, and social engineers. The first class by the vigor of their agitation stir the attention of the public. The second by the inspiration of their personal presence draw men after them into action and accomplishment, the third discover and apply fundamental causes which continue to produce results when they are gone.

The safety movement has had reformers and leaders. It is a wonderful crusade which has been made in the last few years for the conservation of human energy. We are now fast approaching the stage when further progress will depend on whether we are as good engineers as we may have been reformers and leaders.

The movement in its present stage is very clearly an engineering problem. The conviction that accidental injury can be lessened and, because it can be, should be, is now so widespread and well defined that there is but little need for the reformer's eloquence. The convinced, not to say convicted, industrialist is everywhere asking—"How?" The engineering answer is, organization. It may not be at once apparent that I am using this word correctly. Let me illustrate. We need a machine for a certain purpose. The materials, the mechanical principles, the artisan's dexterity, are all in existence. These must be combined by the skill of the engineer, organized in other words, so that the parts of the ultimate mechanism shall work in balanced harmony.

I presume that, when I was invited to discuss this subject, shop organization may have been uppermost in the mind of those making up the program. I shall permit myself a somewhat broader consideration since there are many who could speak with much greater authority regarding the details of shop management.

I think a fundamental principle of all organization for safety is that it must begin at the top. What is the top? In my judgment, it is the governmental agencies which are supposed to control these matters. It is an open secret that, with all the excellent and valuable things they have done, such agencies both here and abroad are in very considerable measure a failure in securing the end sought, namely, safe working conditions.

*Part of the proceedings of the First Pennsylvania Industrial Welfare and Efficiency Conference held at Harrisburg, October, 1913.

Why this imperfect measure of success? Because they have been based on coercive principles rather than constructive. Very many of our methods of government are inherited from the ideas developed by warfare. We have moved far enough to escape the fact. The cheering element in the condition of our State organizations is the development of industrial boards which have the power and opportunity to act in a co-operative way with industrialists instead of applying coercion to them. Let me say with much emphasis that Pennsylvania will take its rightful place among the leaders of the movement for industrial safety in proportion as it develops the co-operation idea. We hear much about law enforcement. We need to hear about it. But who enforces the law so far as I am concerned. I do. None other. To serve one manufacturer who willingly enforces the spirit of law upon himself is greater gain than many prosecutions. This ought to have been done while not leaving the other undone.

We are at the parting of the ways in this matter of civil organization. We can proceed as we have done and accomplish much, or we can adopt a new, though not untried attitude, and open the way to ultimate achievement, of whose scope we have little notion. Having begun at the top with the State bureau, how shall it be projected outward to the employers of the State? First, by calling them into council in the development of the orders prepared by the industrial board. Second, by the use of exhibits and lectures by which the State undertakes to come into vital contact with every organization of employers within its borders. Third, by some such driver as that being worked out in New Jersey by General Bryant, where some member of each industrial organization embodies the interest of the State in the conditions of the plant.

What shall we say about organization within a plant? First, let me pay my respects to the ideas embodied in the word "standardizations." Our ideas of government are derived largely from warfare. Our ideas of standards are derived from mechanics. Neither war nor mechanics can set standards for men. Insofar as our safety problblem is mechanical, let us by all means have standards. But it is to only a small degree mechanical. It is human. We must beware lest in urging standards on the human side we forget that variety and not uniformity is the prime and essential characteristic of human progress.

Why have our public schools been assailed in recent years with such vigor? They had become standardized. By what standards? Those derived from the old time classical college. Let no one suppose for a moment that I underrate those institutions and the tremendous service which they have rendered and which their successors are rendering. I was brought up in them. I am a part of them.

But I see very clearly that our public schools must set themselves to tasks not dreamed of in the days when the classical college was supreme.

The manufacturer who permits what someone else has done to constitute the standard of what he will do, will never really get into the spirit of safety work. He may get helpful ideas from those who have accomplished things but he must assimilate them and make them his own and when he has done so they will be almost sure to appear in forms quite different.

I refrained at the last from publishing in my report on the iron and steel industry a set of operating rules, partly because I feared someone might adopt them. I am a great believer in the maintenance of individual initiative. I have no liking for the sort of standardization exemplified in the limerick:

There was a young lady of Niger,
Who went out to ride on a tiger,
They came back betide,
The lady inside,
And a smile on the face of the tiger,

standardized by tiger standards.

In short, in plant organization we should encourage variety both for the sake of the plant and for the sake of the movement. Experiment in a multitude of diverse directions is the basis of all sound scientific progress.

After what I have said no one will expect me to attempt the outlining of a standard scheme of shop organization, least of all, do I expect to make the attempt. But I *will* do this. I will outline what I think I would do if I were a manager convinced of the necessity for organizing. This will be a present idea or ideal. If I were confronted with the actual problem I should doubtless do something quite different; at least I hope that it would be different. I would at first assure myself that those owning the business and holding me responsible that a profit should be returned from it, were ready to back up the plans with sympathy and money. Begin at the top again. With that assurance I should determine upon some one to act as safety inspector, engineer, director or whatever designating term might be applied. He should not be responsible for production in any fashion. That is almost the only point that needs emphasis. A safety leader in a plant may come from almost any relation to the business or from no relation provided he have a large measure of common sense and reasonable tact in dealing with men. Many will be inclined to insist that he should have what they will call practical training. Observation clearly demonstrates that some of the

very best safety men acquired all their knowledge of practical mechanics after coming on the job. Now why should not this safety man be partly concerned with production problems? Because if he is so concerned that is likely, indeed ought, to become his primary concern. Production under modern conditions demands undivided attention. If my plant were not large enough to justify occupying all of a man's time with safety problems, I should undertake to ally it with the employing of labor. A central bureau or agent to secure the necessary men is a very essential feature of the best organization and the work of Director of Safety combines with it naturally and effectively.

When I put my safety man in charge and while he was feeling out the situation, I should turn my attention to the method of providing surgical care in cases of injury. I regard this as being in very many cases the weakest link in the provisions for plant safety. No plant however small can regard itself as properly equipped that does not have somewhere about it a place or places properly constructed and equipped for the care of cases of injury. At what point of size a trained nurse should be placed in charge, and when the constant service of a physician should be provided, I do not undertake to say, but experience shows very conclusively that the attempt to economize in such provisions is usually not economy, but parsimony.

Having my Director of Safety and my provision for surgical care established, I should as the next step, establish what I may call a plant commission of safety, sanitation and welfare. Of this commission there would be three permanent members, myself, the director of safety, and the one in charge of surgical organization. With these permanent members, a certain number of department heads should be associated, changed at such intervals that in each year every man responsible for production in a department should serve for some period.

This is nothing new. Calling it a commission instead of a committee, does not change its nature. I have done so rather to emphasize the nature of its duties. It should be a body broadly studying conditions and determining methods, rather than a body attending to details of safety work. The one novelty of my suggestion is the bringing in of medical men. Until we bring to bear on the safety problem, the knowledge which medical men ought to have, we shall not get all the results which are desirable. Observe that I say *the knowledge which they ought to have.* At present the whole problem of factory sanitation is unknown land to many good surgeons. They have given it no thought. It is time that industrialists introduce them to part of their professional duties. Now this industrial commission of mine should be held responsible for studying and formulating a

plan for the entire plant. It might work out in this way. A committee of foremen in each department serving for considerable periods but gradually changing, who give a certain amount of time each month to inspiration and the making of written reports. Perhaps each member of these committees would be particularly responsible for some definite area. In some way these permanent foremen's committees should at times be brought into personal relations with my industrial commission. This would be done in order that the spirit of the movement, its co-operative and democratic character, be duly impressed upon these men who deal directly with the work people.

Then my commission should attack the fundamental problem of arousing and maintaining the interest of every employee. Until the last man on the job is given some notion of the safety idea and of his relation to it, the goal has not been reached. The moment we reach that goal it recedes from us with the influx of new and untried men. Let no man suppose that this effort can reach an end. It must be, in the nature of the case, forever unfinished.

I think my commission would decide to have committees of working men. At least they would study that problem with the utmost care. I am quite sure that they would adopt means of assuring themselves of the familiarity if the men with safety rules and mark in some appropriate manner certain degrees of proficiency.

I think we would vary the routine of these workman's committees sometimes, and instead of sending them out to find unsafe places and practices, ask them to report on the things which they could recognize as being done, not for the sake of production, but for safety. It is very wholesome for all of us, at times, to count our blessings.

Finally, my commission should not stop with the internal conditions which conduce to safety. They should consider whether they might not contribute to the development of stout hearts and vigorous bodies, which are, after all, the best safeguards. For example, a play ground now and then. That is another story—I forbear.

RACIAL DISPLACEMENT IN PENNSYLVANIA INDUSTRIES.

In the first of the series of articles on immigration the general features of the problem in Pennsylvania were discussed. The second article analyzed the nature of recent immigration to the State. In this, the third article, the racial changes in our industrial centers, will be explained.

In the beginning it may be stated that the changes in our agricultural communities and farming districts are not noticeable. While it is true that many Poles, Italians and Hungarians have purchased farms or gone into the dairy business, yet none of these nationalities have in any way supplanted the original stock engaged in agricultural pursuits. Americans, English, Germans and Dutch, still constitute the body of our farming population. But a great change has taken place in our industrial centers, particularly in those places where are located the great steel mills, iron foundries, blast furnaces and coal mines. In these districts where originally native-born American and the older immigrant races predominated, today there are men of all nationalities. This change has gone on so extensively and has affected such a great variety of industries that it is worth the most serious consideration as to its nature and causes.

In the second series of articles we pointed out that early immigration to this State was from western and northern Europe. It included, in large numbers, the English, Welsh, Irish, Scotch, Dutch and German nationalities. Until the early 70's practically no representative of other nationalities came to the State. After that time began to come a few Poles, Lithuanians and Slovaks. The number was not great until about the middle of the 80's. Then followed Italian, Hungarian and other eastern and southern European nationalities, until by 1900 the number of these had increased so greatly as to predominate in the stream of immigration. Since 1900 the earlier type has rapidly decreased, while on the other hand the western and southern Europeans have continued to come in rapidly increasing numbers.

Concomitant with this change in the stream of immigration to the State have gone on similar changes in the great industrial centers. The change in each district has to all practical purposes been similar to that of each of the others. Thus at first in the anthracite coal fields were employed English, Welsh, Scotch and some German miners. Practically all of these men had been experienced miners in their native country, and when they came to this State, naturally

sought that type of employment in which they had acquired the most training. Representatives of these nationalities constituted the working forces in all regions and plants until 1875. After that time Poles and Lithuanians, followed in the 80's by Slovaks, Ruthenians, Syrians and Italians, started a new type of immigration. They were men of little experience in mining, but very sturdy, hardy, and willing to accept employment at the heaviest of manual labor. As the employment of these races increased, the native employees gradually left the mines. This transition is largely due to the fact that the foreign-born laborer of the newer type is willing to accept employment at a lower wage than the native-born employee. He is not encumbered with a family like the native laborer, is able to live more cheaply, and lacks the experience to command as high a wage. Although it is true that the native born has ceased to work at heavy labor in the mines, it is significant that many Welsh, Irish, and English are still employed as managers, superintendents, and foremen, i. e., they have gone into the semi-skilled pursuits.

In the bituminous mines also has gone on a similar transition in the character of employees. Here before 1870 the older stock of English, Dutch, German and Welsh immigrants were employed. These also had had a previous experience in mining in their native countries. A few representatives from southern and eastern European nationalities were employed during the 70's but the number was not great. In 1880 the number began to increase and the real displacement of the English-speaking miner commenced. Nevertheless the final stage of the transition did not take place until during the decade 1890-1900. The first nationality to come in numbers to the coal fields was the Slovak, who came during the early 80's, and was followed in a year or two by the Magyar. Polish immigration began about 1890 and was followed by the Croatian, Servian, and Italian immigration during the next ten years. During the last fifteen years, the period of the greatest immigration to the bituminous region, Russians, Bulgarians, Roumanians, Ruthenians, Syrians, Armenians, Macedonians, Croatians, Servians, and several other nationalities from eastern and southern Europe have come in larger and larger number.

Since 1900, practically no northern and western European laborers have been employed in either the bituminous or anthracite coal fields. Three-fourths of the employees are of foreign birth. More significant is the fact that eight-five per cent are from southern and eastern Europe. Most of them have lived in the United States less than twenty years, while over one-half have resided in the State less than ten years.

The early immigrants were experienced miners. The later immigrants were peasants, farmers, unskilled laborers and handtradesmen who have had no experience in mining. The United States Immigration Commission, which made a rather extensive inquiry into the previous occupations of the foreign-born employed in the coal industry, comments upon this at length as follows: "The greatest proportion of males who were sixteen years of age or over at the time of coming to the United States and who were working for wages were farm laborers before coming to this country. Only small proportions were in other specified occupations and none had any previous experience in coal mining. All those working without wages were farm laborers, and practically all of those working for profit were farmers. Lithuanians show the highest percentage who were farm laborers for wages, while Slovaks show the highest percentage who were farm laborers working without wages. Slovaks, closely followed by Poles, show the highest percentage who were without occupation before coming to the United States." This is also true of females who came to this country over sixteen years of age.

The history of immigration to the iron and steel centers is similar to that into the coal mining sections. It may be roughly divided into three periods—first, the period preceding 1880; second, from 1880 to 1900, the period of transition; third, 1900 to date. Prior to 1880 the native-born white and older immigrant nationalities were employed in the iron and steel foundries and furnaces. After 1880 began to come over Bohemians, Italians and Hungarians. Nevertheless, until 1890 the number of immigrants from northern and western Europe gradually increased, but after 1890, with the exception of the Scots, comparatively few were employed in the iron and steel business. It was during this period that the southern and eastern Europeans began to predominate. Beginning about 1900, Slovaks, Magyars, Italians, Croations, Poles, and Russians furnished the chief supply of labor for the industry.

Immigration to Johnstown is typical. The order in which various foreign nationalities came is as follows: Welsh, 1852; Irish, 1855; German, 1858; English, 1858; Slovaks, 1880; Polish, 1880; Magyars, 1885; Croatians, 1897; Servians, 1897; Italians, 1900; Syrians, 1903; Macedonians, 1905. More than one-half of those at present employed in connection with the steel mills are of foreign birth, and the larger proportion of these are from southern and eastern Europe. Hungary appears to have contributed the largest number.

In the Pittsburgh district approximately 26 per cent of the male employees in the iron and steel industry have been in the United

States from five to nine years inclusive; about seventeen per cent, twenty years or over; ten per cent, three years; four per cent, one year and two per cent less than one year. Recent immigrants to this district generally enter the steel mills immediately upon arriving.

In the beginning, the steel plant drew many laborers from the coal fields. But owing to the rapid expansion in both industries, the supply of labor became inadequate to meet the demands. Accordingly, officials in charge of the steel plants took active means of securing employees. An early method was to send an official to some of the large eastern cities, especially New York, to gather up a group of laborers who were willing to engage in this form of employment. Other companies engaged labor agents to secure gangs of laborers for shipment to the steel districts. A more common practice, and one which is engaged in quite largely at the present time, is advertisement in the foreign-language newspapers of the large cities where immigrants are congregated. The second of these methods is considered unsatisfactory.

The causes for racial displacement in the industrial centers are economic. In the beginning, the supply of local labor was adequate to meet the demand. Furthermore, most of the available laborers had some experience in the mining, and in the iron and steel industries. It was natural, therefore, for the large companies and firms to draw upon the native-born population to supply whatever labor they demanded. But with the rapidly expanding output, coupled with an increasing demand for labor due to general industrial development, the supply of local and native labor became wholly inadequate to meet the needs. Inducements were then held forth to invite labor from other countries. Once these immigrants became established at suitable and profitable employment, they wrote back to their families and friends telling them of the high wages and great industrial opportunities, thus inducing the many thousands to begin migration to the United States. Two causes can, therefore, be assigned as the impelling forces back of racial displacements in Pennsylvania industries—first, the rapid expansion of our industries, coupled with the inadequate supply of native labor; second, the advertisement of industrial opportunities by the newer immigrants from southern and eastern Europe. At first such displacement was regarded as unfortunate, but in view of the fact that the supply of native labor was inadequate to meet the demands of our great industrial development, a change of attitude is rapidly taking place. Employers and the State at large are coming to see that without alien labor, it would be wholly impossible to carry on some of our greatest industries. They are now looking upon immigration, therefore, as a normal and natural source of supply.

LIGHTING, ITS EFFECT ON EFFICIENCY, SAFETY AND FIRE PREVENTION.

The proper lighting of workrooms, storage rooms, passageways, and stairways is a subject which is beginning to receive the attention which is its due. It is being realized more and more that adequate lighting is a necessary element when we consider all the items which enter into safety, welfare and efficiency work.

Very little attention was formerly paid to the fact that it was utterly impossible for a workman to do his best when handicapped by poor light. Today we find in most new factories which are being erected ample facilities provided for letting in God's good sunshine. Many firms are so much interested and so proud of their buildings that they show pictures of them in their advertisements and make note of the fact that their products are turned out by contented workmen in pleasant surroundings. A glance at any picture of recently built factories will show the large extent of wall surface which instead of being covered up with brick or metal is composed of panes of glass. A trip through these factories will also disclose the fact that this glass is kept clean.

Too often inspections throughout this State have shown window panes in factory buildings which were so heavily coated with grime, dirt and cobwebs on the inside and on the outside, that it was almost impossible to tell they were window panes. The fact that it was deemed necessary to place them where they were, should also show the necessity for keeping them clean.

The excuse is often offered, that "I never thought about it" or "We don't have time to attend to such little matters." There are a few persons who possibly don't care but it is believed that they are few and far between. It seems that the great trouble is, because the matter is never given a thought. It is reasonable to assume this, as uncleaned windows will be found to be just as prevalent in offices as in the workrooms. The criticism that is often made by some employees—"Oh, they don't care whether we can see or not"—is therefore one which is not justified. Experience has shown that the matter has not been thought of or, if it has, it has simply been put off to a more convenient season.

The object then of this article will be to point out briefly facts which, although they are known to everybody, are seldom given the thought and attention which they deserve.

In the first place no one would venture to state that a workman could work to his full capacity unless the light necessary for his

work is adequate and properly placed. Poor illumination will decrease his efficiency through slower movements, inaccuracy of work, and increased eye and nerve strain.

It may, therefore, well be considered one of the most important factors of efficiency. In a great many places, however, it receives no attention from this standpoint. How many times when one goes into a machine shop will they not see an electric light bulb or a lighted gas jet above the lathe or other piece of machinery hung about level with and just in front of the operator's eye. In a woodworking shop, in many instances, there will be found the same condition. A shade properly placed to direct the rays of light downward on the work instead of in the workman's eye would mean more comfort for him, and would lessen the chance of serious eye strain in subsequent years. In the matter of natural light, how much better if the light should come over the operator's shoulder than to have its full glare strike him in the face. Cases have been known where operators working in front of windows with the light shining into their eyes would have to rest their eyes or close them for a few moments before the pupils were dilated enough to enable them to distinguish objects in other parts of the workroom.

It can readily be seen that there can be too much or too little light. The management which is striving after efficiency will, however, see that adequate light is provided.

Light is another great factor in the matter of accident prevention. Statistics have proven that the largest percentage of accidents occur during the winter or dark months, or during the hours of the day when the light is beginning to diminish. In this Department many accident reports have been received which show that many accidents are due to lack of light. Workmen have been walking along dark passageways and have tripped or stumbled over articles or tools lying on the floor. In their falls they have received slight or serious injuries. They may have cut or bruised their arms or legs by falling against pieces of machinery or have been seriously burned by touching heated objects in trying to recover their balance. In walking towards lights which have not been properly shaded they have in some instances been blinded so as not to be able to observe moving objects coming towards them.

Improperly lighted stairways are another fruitful field for accidents. A light is sometimes found at the top and bottom but in the center of the flight of steps where they turn upon themselves, no light has been provided. Such places and all landings should be sufficiently illuminated to enable one to see his way without difficulty.

Another important matter into which lighting enters is the matter of fire prevention. In too many instances in factories, theatres,

hotels, and apartment houses are store-rooms, closets, corners or unfrequented places used for storage purposes, where lights are not provided. If a certain article is wanted which has been stored in these places, the person who has been sent for it will strike a match or carry an open flame while looking for it. In many instances they either carelessly throw the supposedly extinguished match on the floor, or in a corner among litter, or the open flame which they have carried has unnoticed come in contact with some other combustible material. A small fire has thus been carelessly started. This may smoulder for hours unnoticed but eventually break out with disastrous results.

Inspections throughout the state have disclosed this fact in practically every establishment. It can readily be verified by going to any storage place, closet, or dark corner, where no light has been provided, and burnt match sticks will invariably be found lying on the floor. Owners and proprietors to whom this demonstration has been given have been astonished at what has been disclosed, especially those who have issued orders that no matches should be used around their plants. Very frequently more are found in those establishments than in others where conditions do not require such rules. The only way that regulations of this nature will be obeyed is to have all necessity for using matches removed. This can readily be accomplished by having all seemingly out of the way places, although used for storage purposes, provided with proper lighting facilities.

To sum up then, light is a factor which should be considered from the standpoint of efficiency, safety, and fire prevention and it is hoped that more attention will be given to it in the future than has been done in the past. Let there be a general cleaning of windows and let all artificial lights be properly shaded in the immediate future in the factories of this Commonwealth.

MAKING EFFICIENT EMPLOYEES.

Considerable difficulty from time to time is experienced by many business managements in having work done properly by employees. Often men are heard to express the opinion that "It is impossible to find the proper help that we need." Especially is this true in regard to employers of large numbers of clerical help. They complain that initiative is lacking, carelessness is prevalent, and indifference is shown to their work. Investigation has also proven that in many instances this sentiment is found to prevail in other lines of business.

On the other hand, we find many cases where employers express their appreciation and commendation of the work which is being turned out by their subordinates. They claim that they have the best workers that can be had and that they are always willing to do everything that is requested of them and that they do it well.

There evidently must be some difference in the systems used by these two classes of men and it is for the purpose of calling attention to this difference that these lines are written.

In former days, the rudiments of an education consisted of a knowledge of the three Rs—reading, 'riting, and 'rithmetic. Today in the business world, we may claim that the successful manager of men is one who uses the three Rs in his system; only he gives another designation to the Rs. He plans to have the RIGHT MAN in the RIGHT PLACE working the RIGHT WAY. It has been found that if this rule is put into operation, not only will the employees be contented and work with a greater degree of efficiency, other things being satisfactory, but the employer will also feel that he has competent helpers and ones that are working to the best advantage.

In the sporting world recently an illustration has been presented in the shape of the baseball team of Boston where generalship and management have made experts and champions out of what was, six months ago, considered to be cast-off material. Many people consider the performance of this team wonderful and many people ask, "How was it accomplished?" In answer to this question a prominent weekly has recently quoted John J. Evers, captain of the team, as saying that it was entirely due to the skillful administration of the manager, George Stallings. He says "Stallings first sizes up a player, and if he thinks he is of the type that will have his spirit broken by 'riding,' he encourages him, jollies him along, and does little scolding. But with the other type of player he is different. If a man is inclined to take things too easy or be careless, he can

give him one of the best tongue lashings I have ever heard, and I have listened to a good many. He gets these men so that they will go out and fight to the finish, fearful lest they may do something which will displease their boss. The Boston boss is an optimist about ball players. No matter how bad a man looks, he generally has a good word for him. 'I believe something could be done with him, if he were handled right,' I have heard Stallings say frequently about a man, and he sticks to his views in the face of any sort of adverse criticism."

This policy which worked out so admirably during this past baseball season is one which should seriously be given consideration by every person who aspires to become a leader among men. More and more large manufacturing plants are realizing that some men are better fitted than others to perform certain duties. They have a standing rule that where an employee is found to be unfitted for a particular department, he is given a chance in every other department of the plant, before he is discharged as being incompetent. This determination was reached after it had been found that some men, who had been considered absolutely worthless by foremen in one part of the plant were found, after trial in other departments, to be among the most valuable men in that department. A little thought given to the subject should surely convince any one that this is the proper method of dealing with this problem.

We are all aware of the fact that every one is not a doctor, nor a musician nor a skilled mechanic. Some of us excel in one thing and some in another. To one detail work appeals, while to another it is distasteful. Persons who have a large experience with people of different characteristics and ambitions claim that every one has some characteristic, skill, talent, or aptitude which would make them particularly skillful in a certain line of work. The successful leader or manager should try to ascertain in each person under him what talent or what skill that is and then assign him his work along that line. He will find that if this is done the results will be astonishing and those who have never shown any surprising activity in the positions they hold will develop into useful and efficient employees.

The suggestion is therefore offered that whenever conditions arise where employees do not give the desired satisfaction in their work that they be given an opportunity to show their talents in some other direction, before their services are permanently dispensed with. Many employers have testified that they have tried this out very extensively when industrial conditions have been such that workmen were scarce and it has worked out so well that they now have made it a permanent policy.

Usually wherever the size of the plant warrants it, an employment bureau is established in charge of a competent person. Through this bureau all needs for new help are supplied and no worker is permanently discharged, unless he has been passed upon by the person in charge of this bureau. The latter makes every effort to place this man in work for which he is fitted and which is congenial to him.

Let us, therefore, in the future endeavor always to put the RIGHT MAN in the RIGHT PLACE, and time, experience and teaching will finally lead him to perform his duties in the RIGHT WAY.

COMPLAINTS.

From time to time various members of the inspection force of the Department receive complaints to which they are asked to give their attention. The officials of the Department are ready at all times to receive them but it is thought wise to call attention to some of these complaints which involve matters over which the Department has no jurisdiction. On numerous occasions girls have sent in letters which stated that they were compelled by their own parents to work all hours of the day and night in their own homes. Complaints of this nature cannot be given any attention, as domestic and farm labor are exempted from all provisions of the Woman's Labor Law. The Minor's Act does not cover these cases either, even if the children are under legal age. The law does not permit interference by any state department in family matters of this kind. If the abuse of parental authority is flagrant, the attention of the proper court officials should be directed to it.

Not long ago a complaint was sent into one of our branch offices stating that the driver of a team was compelled to overload his team. The driver was the complainant and he stated that he thought more of his horse than he did of his boss and he wished the Department to use some method of preventing this practice. Manifestly, the only thing the Department could do was to refer him to the Society for the Prevention of Cruelty to Animals and tell him that he should ask them to take up the matter.

By far the greatest number of complaints which reach the Department are based on statements made by discharged employees or

jealous persons. Letters are received or personal statements are made that certain employees are required to work beyond the legal limit. When the inspectors visit these places and interview the employees, the latter state positively that they are not required to work other than the official hours posted. An examination of these posted hours show that they are not illegal. In a great many cases these statements of the employees are, no doubt, untrue but it is sometimes impossible to verify them.

Anonymous letters and messages may give clues to violation but in order that these communications receive the proper consideration any well-meaning person should be willing to endorse the message. A short time ago a complaint was sent into the Department stating that women employees in a certain underground establishment were compelled to work all night. An investigation of this particular complaint disclosed the fact that no females were employed in this establishment at any time during the day or night. As the name of the complainant was not given, the matter could not be looked into any further and, no doubt, criticism was directed against the Department for not remedying this condition. It may be that the right establishment was not given in the first place but it was impossible for the Department to verify this. The necessity for messages bearing the name of the writer can, therefore, be seen. Any information received will be treated confidentially and names of persons giving the same will not be divulged to any one.

POSTER FOR WORKROOMS WHERE LEAD PRODUCTS ARE HANDLED.

The Department has recently issued a poster, 11 x 14 inches, in size, for use in workrooms wherever lead products are handled. The following suggestions to employees to prevent lead poisoning are given:—

Lead poison is usually taken into the system through the mouth.

Do not put the fingers in the mouth.

Do not take food while at work.

Before eating and before leaving work, wash the face, hands, and arms with soap, and thoroughly cleanse the mouth and nose.

Do not go to work on an empty stomach; this practice weakens the system and makes it more liable to be poisoned.

You must not eat lunch in the same room in which lead or other poisonous materials are handled.

Take a bath frequently; cleanliness is the best preventative of lead poisoning.

Do not chew tobacco while at work. In handling tobacco, the lead dust is carried from the hands to the mouth. Chewing tobacco does not prevent the user from swallowing lead dust.

Do not drink alcoholic liquors while at work, or better, avoid their use entirely. Whiskey does not cut the lead in the system, as a great many suppose. Alcohol always weakens the system and makes it more susceptible to lead poison.

Drink plenty of good milk; it is a valuable preventative of lead poison.

Keep the finger nails clean and cut short, so the poison will not collect under and around them.

It is better not to wear a mustache or beard; they collect the poisonous dust. If worn they should be cut short and kept clean.

You must not carry poisons home. Overalls and caps should be worn during working hours and left in the shop at night. They should be washed frequently.

Whenever constipated, take at once a dose of Epsom or Glauber's salts, or other harmless laxative. It is exceedingly important that the bowels be kept in good condition.

When sweeping always dampen the floor or sprinkle it with sawdust to prevent raising dust, or use vacuum cleaner.

The handling of dry lead or other poisonous materials should be done in a separate room, as far as possible.

Where workmen are compelled to work in poisonous dust, they must wear a respirator, furnished by employer.

If a workman finds himself easily affected by lead, he must leave the trade at once, and thus avoid serious trouble.

If ill, consult a physician at once. Delays may mean serious danger and loss of time.

A limited number of these have been printed for distribution and all requests for the same will be supplied as long as they last. It is suggested that they be placed in all workrooms wherever lead products are used, such as paint shops, white lead works, storage battery workshops, etc.

These posters have been printed in four languages, namely, English, German, Polish and Italian and in making requests for copies, kindly specify what languages are desired.

SECOND ANNUAL PENNSYLVANIA INDUSTRIAL WELFARE AND EFFICIENCY CONFERENCE.

The Second Annual Pennsylvania Industrial Welfare and Efficiency Conference which was held in Harrisburg on November 17th, 18th and 19th proved a very great success and the publishing of the proceedings will commence in the December issue of this bulletin.

DISCUSSION DURING THE 1913 CONFERENCE.*

Mr. L. H. Burnett, Carnegie Steel Co., Pittsburgh:

"Mr. Chairman, Ladies and Gentlemen: I think we were all very much interested in Dr. Chaney's paper as the subject involves probably one of the most important elements in safety work; that is, plant organization. It may be of interest to you, certainly of great interest to me, to relate briefly an experience we had with one of our large plants. The superintendent of that plant was a progressive, up-to-date, hard-fisted mill man. When the safety idea was first proposed to him he did not take very kindly to it. We kept everlastingly at it and he finally became a convert. He called a meeting of his superintendents and foremen and delivered to them what to my mind was the best safety talk I have ever heard. He had before him the statistics and figures of accidents that had occurred in his plant and called their attention to the number of them that could have been prevented by due precaution. He did not in any way attempt to protect the company and told them that the company had been responsible for some of these accidents. He appealed to them for co-operation and asked them to find fault with anything in the plant that was not what it should be. He appointed a permanent safety committee. That was some nine months ago. The work has progressed there, I think I can say truthfully, more rapidly than at any place I have ever been. They have what they call floating committees of the workmen themselves. I am not telling this as a new idea. It is an idea that has been in force at a number of plants for several years. But the thing has worked out beautifully and my own personal opinion is that the two most important elements in safety work at any particular plant are first, to get the interest, the intelligent co-operation of the boss himself, and next, and just as important, to get the interest of the man on the job. It is the men on the job who know those dangerous conditions better than anyone else and they should be given an opportunity to tell about them. A half day of each week is spent by the workmen's committee in going through their department, looking into the dangerous places and reporting to the general committee. I want to say that those committees have made more than 900 recommendations and out of those 900 the general committee has rejected only five, which shows that the man on the job knows what he is talking about.

*Part of the proceedings of the First Pennsylvania Industrial Welfare and Efficiency Conference held at Harrisburg, October, 1913.

The thing to do is to get him thoroughly interested in the safety idea. As I say, these men not only examine conditions in their own department, but once a month instead of examining their own department they are assigned to some other department in the mill. Now, the purpose of that has been to create a friendly rivalry among the different departments of that plant. Above all else, and I have nothing more to say, it is necessary to get the support and the enthusiasm of the boss. If you have got that, the rest will take care of itself. The trained safety man to-day can walk into any plant in this State and before he is there fifteen minutes he will be able to say to you whether the boss is favorable to this safety movement."

Mr. Carl M. Hansen, Workmen's Compensation Service Bureau, New York City.

"I think the last statement made by a previous speaker might create the wrong impression. He said that in his opinion the day of the showing of pictures of mechanical safeguards is nearly past; that from now on, we would have to devote our time to the education of the workman. That is true as far as United States Steel Corporation is concerned, but it is most decidedly not true as far as the rank and file of employers in the State of Pennsylvania or in any other state of the Union are concerned. The experience of the United States Steel Corporation is a benefit to us simply insofar that it shows what can be done by systematic, co-ordinate, co-operative methods, but we must not forget that, although that corporation in approximately ten years in many plants has reduced serious and fatal accident by seventy per cent, we are dealing there with a homogeneous corporation. They are under one central executive management and can work co-ordinately. Compare this, however, with the State of Pennsylvania, Mr. Chairman, with twenty-seven thousand different manufacturers, with no interest in common in many respects, and in many instances being in competition; the cases are not analogous. I simply desire to impress upon you gentlemen not to let over-enthusiasm run away with you. We have had statements made here and I have listened to similar statements in various state legislatures where it has been said by the advocates of legislation for State Factory Inspection Departments, 'If you will pass the laws and give us the appropriation asked for, we will reduce the industrial accidents from fifty to seventy per cent.' Such statements are made on the basis of the experience of the United States Steel Corporation, but it is an erroneous comparison, and the conclusion will be wrong. May it not be well for us to realize that? We are indeed indebted to the United States Steel Corporation for all that they have done.

They have in the accident prevention field in the United States, shown us what results can be obtained, but we must not get over-enthusiastic and believe because they have reduced accidents in their plants over a given period a certain percentage, that the same result will obtain in other industries. I do not believe for one moment that the speaker desired to create that impression, and I do not desire either to infer that anyone present here did not appreciate that it was only applicable to the United States Steel Corporation. I always believe, however, in giving a little more than we promise and therefore would deplore anyone leaving this conference without a clear appreciation of the task undertaken; this was my reason for raising the point.

I thank you."

Mr. Albert R. Jerling, of Pittsburgh.

"I have been very much interested in the pictures shown upon the screens, but there is one thing that I have not seen and in my mind it is a part and a most important factor in your social welfare work which has been overlooked. This is the man who operates the public utility, known as the street car. Not only do these railroads run through the country districts, but they run right by your very door, which makes it all the more dangerous. I have not seen any pictures of the street cars and the operating conditions. We haul more people per day than do the steam railroads; not only do we haul your wives, your children, and the working men in the various cities, but we also haul the public in general. No one knows any better than do the street car men, when we have a little mishap or accident, and upon getting names for witnesses, the personal cards we receive and the many different states they are from. Now those who have spent years in the street car service, are deserving of some attention. Much can be done along this line by giving us protection. A frozen man can't work any better than a roasted one; both have the same trouble, rheumatism.

It has been through evolution that these great changes were brought about; we were not always speeded up to the highest pitch as we are to-day.

In the days of the horse car, travel was much slower; occasionally the driver could drop into a drug store to get some change and at the same time get warmed up a little, but when a motorman has to stand on the front of a summer car on a frosty morning, it makes him feel as if a cold blast in winter was hitting him. It may be all right to those who only have to go a short distance, but when it comes to the motorman standing on the front end on a bitter cold day, it is a different proposition. He has to face the storm. In a

climate such as we have in Pennsylvania, it may rain one hour and blow the next, and of course we have to take it as it comes, so we ask for vestibules. In addition to this, we have to contend with the running board; this is not only dangerous to the conductor, but also to the general public, especially where the car runs on narrow streets. Quite frequently I have seen little children sitting out on the curb in danger of being hit by the running board. These are some of the conditions that have been overlooked in your welfare work, and I desire to call your attention to them, so that you can give us some consideration and help to abolish the running board. Not only do we desire this, in order that we may be able to prevent accidents, but also that we may be more fit physically, by having better strength to do our work.

There is another important thing to be mentioned, which also has not been shown upon your screen here.

As we do not come under the inter-state transportation laws, because very few of the street cars go out of the state, we do not have the advantage of the law compelling the use of the automatic coupler. There are a great many trailers to be hauled and hence we have to use a link coupler. We do not have sufficient room to get through and if we happen to get too close the coupler will fly up against your shin bone, and although you may not feel it when you are in a hurry, it leaves a scar. When a person is advanced in years, it is pretty hard to get a thing like that healed up, and the first thing you know you have a troublesome and perhaps a dangerous wound.

I especially call the attention of the ladies present to this condition, because they have been an important factor in the work of helping to obtain better conditions. I thank you for your attention, and trust that you will do something along these lines."

Mr. R. J. McGrath, Pattern Makers' Association, Pittsburgh:

"The Department of Labor and Industry without a doubt deserves great credit for the calling of this convention to give all of us a chance to express our views. I want to take this opportunity, which will only occupy a minute, to dwell on the subject of some of the woodworking machines in the manufacture of patterns. I have possibly seen all the pictures thrown upon the screen during this entire session. And only a few safety guards were shown on the joiners and circular saws and band saws. I come from Pittsburgh. I have been around the district all my life, and I have failed up to this time to see the machines guarded. I want to tell you, Mr. Chairman, Ladies and Gentlemen, that it is not a very nice matter to look into. We have an organization there of almost five hundred men

and some of the hands and fingers which you will see on those men would make your heart ache. Now, where they got those photographs of the machinery safeguarded, I don't know, but I am sorry to say that none of them have been taken in Pittsburgh. I realize further that this department is practically in its infancy and I am not going to blame anybody. I believe the Department is doing the best it can, and all I can say is that I am at your service any time, and wish you success."

Doctor Lucien W. Chaney, Bureau of Labor Statistics, Washington, D. C., said:

"We have heard our American situation criticised with great severity and with great justice on numerous occasions. What really is the condition of American industry in the matter of accidents? How does American industry compare with foreign industries in that particular? The figures which the Federal Bureau has now assembled show this: that American industry is better than foreign industry, and worse. No European country is uneven in this matter of industrial accidents. If you take a given class engaged in a given kind of industry, you can tell, in the German Empire for example, very closely what accident rate that establishment will have. It will have almost exactly the average of all the establishments engaged in that sort of industry. On this side of the water the condition is entirely different. We have very good establishments and we have very bad ones. The fact that we have very bad ones, in which the accident rate is very high, gives us our reputation. We get the reputation of having the worst establishments in the whole list. Suppose for instance, we compare ourselves with Germany. The only figures which have been compiled in detail and which it is possible to quote, are those concerning our iron and steel industry. If any of you are interested in the figures themselves, which I shall not attempt to give, the Bureau of Labor Statistics in Washington will be glad to furnish you a copy of the report which is issued by the iron and steel industry. Now, what do these figures show? They show that more than fifty per cent of American establishments in the iron and steel industry are better than the average German establishment. The average rate of all establishments, good and bad, in America is better than the average rate of Germany in the iron and steel industry. Why should we have a reputation of having so serious an accident condition in our American iron and steel establishments? (These figures, of which I speak, were for the year of 1910.) There are two reasons. There are concerns in this country which have taken so little thought for the protection and conserva-

tion of their employees that they have an accident rate which would never have been tolerated in any European country.

Let us face the fact that we have establishments in this country whose operators seem to be entirely indifferent to the loss of lives and limbs of their working people. On the other hand, we have establishments of a character so much superior to the very best establishment to be found in Europe that our average accident rate is lower than theirs. What we need to-day is to level up to the really high level that has been established in the best concerns, which number much more than half of our American plants. During the time which has intervened, since 1910 I know the standard has gone up. It seems only just to our American industries that these facts should be clearly stated. On the average we are certainly on a par with the best European countries. On the other hand there is the other exceedingly humiliating fact that we still have those conditions that are so much worse and our industries must suffer in comparison."

Mr. John Whitehead, Textile Workers of America, Philadelphia.

"I believe it would be a great thing if the working people in the factories, mines, and so on, were given a little more information or instruction in connection with the prevention of accidents, and the caring for injuries. Oftentimes, what appears to be just a slight injury turns out to be a very serious one, because of the fact that the men in a certain room are not able to stop the wheels there, which so very often happens. In many cases, they are at a loss as to how to proceed. They have to find some special person, and it takes so long that serious injury takes place, whereas it could be avoided in many cases. This applies in many different ways. Fires could be prevented in many cases by the workers themselves, had a little information and instruction been given to them. Possibly they would conquer the fire, whereas under present conditions in many factories there would be simply a rush to the fire escapes and towers. There has been no previous practice from their standpoint, and there is a great lack of system.

I am not one who has an opportunity to get statistics; the way I get my statistics is by actually coming in contact with the conditions in the mill. I have worked in every textile state of importance, and I don't need statistics. I have a method of my own, which I wish to state. When I go into a shop or factory, I take a walk around and I can pretty nearly tell you something about statistics in this way. If I see the men, women, boys and girls in a certain condition, I can come very near knowing a mighty lot about statistics so far

as they are concerned. In fact, it would take mighty good statistics to change my convictions in relation to them.

Speaking of European conditions in comparison with those in the United States, I believe that a great many things enter into the proposition. The speeding up system of which we have heard so much, I believe, is one of the great factors that leave our workers so much worse than those in Europe. And I believe that is the one thing that should guide our force because, to my mind, unless you have a fine physique, the race is impossible. The brain is a part of a man's physical make-up and it would be unfair in so many ways under unfavorable environment, if the man were speeded up to the highest pitch. Oppression in any way is against the best interests of society, as well as the individual. I believe we should encourage the individual to stretch out in every direction. We should not oppress men, but encourage them to physical and mental superiority. If we want to maintain our position in relation to the Nations of the World, we will have to do that. I am making these few remarks, so that you will not be misled by statistics. Most of us cannot deny them, cannot disprove them, but still I believe we have a method of looking at society and its individual members that would leave us fairly safe in our judgment as to whether we were proceeding along right lines or not."

Mr. John Hoehn, Business Agent, Brewery Workers' Union, Pittsburgh:

"I just wish to recall to the audience some of the first words spoken in this hall by His Excellency, John K. Tener. He said that speeches and fine words would not bring results, and I perfectly agree with him because speeches have never brought very great results. I wish to suggest to the Committee, who is in charge of this proposition, that more co-operation would be one of the greatest things to bring about results. I believe the forming of local boards who would work in conjunction with headquarters and probably having a convention every year, would bring very great results. We have the laws. We created a Department of Labor and Industry. It is up to somebody else to interpret that law, and it is up to somebody to execute that law. I don't know which is the most important, but in my opinion, the execution of the law is the most important, because if the law is not executed, it is of no value whatever. You have, at the present time, a corps of factory inspectors, but I am convinced that the execution of the factory inspection laws has not been what it should be. I am not speaking of the present administration because I believe they intend to make good. I wish to say

that also one of the most important things is, not alone to guard the machinery, which has brought misery by taking away from a man not only his limb or life, but also has taken away steady employment and thereby created a great rank of unemployed in addition. Whenever a machine replaces a man, there are no provisions made for that man to support himself and his family. You always find that wherever machines go in, the number of men are reduced. It has destroyed the relationship between the employer and the employee. Therefore, one of the points which should be given consideration under this new department is the bringing back of the relationship between the employer and employee. You can't tell me that a man can do his best work when he has trouble at home, when he does not have enough money to pay his doctor bills, or has to go to work without breakfast. It is impossible for that man to feel happy and contented. All of your safeguards cannot alter these conditions unless you do something to change the social conditions and give the man and his family enough to eat. Give these men a fair wage and you will find that there is happiness. It will help to bring back the proper relationship between employer and employee and will do more than all the safeguarding possible. I wish to say that I am delighted to have been present at this conference, and I shall leave feeling that I have been much benefited."

Mr. M. C. Goodspeed, Chairman of the Safety Committee, General Electric Company, Erie:

"I have been benefited very greatly by these discussions and I can go back to Erie with a greater knowledge and tell the men there new ways of meeting their conditions which will help them. We have been endeavoring to make everything as safe as possible for the men. We have a committee of the men who are working with me in inspecting dangerous conditions, and as they are reported, we have endeavored, as fast as possible, to safeguard them. Whether it is a matter of guards on tools, open manholes, or whatever the condition may be, every effort possible is being made to meet the conditions. I am mighty glad that this gentleman who has just spoken has emphasized again the subject of co-operation. It is one of the most important things that has been emphasized in this meeting, and I simply want to speak of it again to say that I have found that the men as a whole are co-operating with us in taking advantage of the safeguards as they have been applied. We do find, however, that some of the men will not co-operate. We do find that some of the men themselves will remove the guards, or will not use them when they are supplied. For instance, we are supplying goggles, free of charge, to

every man who is chipping or grinding. We are trying to enforce the wearing of the goggles, but we are experiencing difficulty in having the men wear them. A man told me this week that he did not want to wear goggles because they bothered him a little in seeing his work, and he thought he could keep chips out of his own eyes. That is a typical example of a few men, and only by co-operation of all the men can we get the greatest degree of safety. We must show the men who are not willing to use these guards that they must use them because if they do not use them, they will injure, not only themselves, but their families. It is not only the men who are going to be hurt. One of the things that every one of us can take back home is the subject of co-operation, and the fact that injury to the man does not injure him alone, but it injures his family, the community, and everything connected with him.

One of the speakers to-day mentioned the subject of 'fool' accidents. I wish to emphasize that again, and I hope the men as they go back will call attention to the fact that some of the employees are always trying experiments and are not being careful. This usually results in 'fool' accidents. It is this class of accidents that calls to a great extent for the necessity of education. Older men cannot see these things. It is hard to get it into their heads, but if we can get the children as they are coming up now, the apprentice boys in the factory, to see what these things lead to and to grow up as careful workmen, then we will have less of this class of accidents.

I wish to emphasize again that the men should all co-operate and that they should help in using and applying the suggestions which are given for safety, and I am certain that those in charge will be glad to have the men bring to them any suggestions and will aid them in improving the conditions."

Doctor Lucien W. Chaney, Bureau of Labor Statistics, Washington, D. C.:

"I want to say a word about the matter of the workman refusing to use the guards provided. I have been studying that question for a number of years, and have come to the conclusion that in a majority of cases where the workman refuses, it is because the guard is a bad one. Those who have provided goggles for their workmen have, at first, usually provided bad goggles which no human being ought to keep on fifteen minutes. The question of a perfectly satisfactory goggle has not as yet been settled. A large number of them have been offered to the working men, but they have been so poor that nobody ought to try to use them. There are a few articles of that sort which I believe are practical but a considerable proportion of

those which have been sold to well-meaning employers should not for a moment be used by the workers. Whenever a workman refuses to use a guard, it ought to raise a very serious question as to whether it is a good one or not. A good many times, you have got to dig under the surface of the situation very carefully before you find the real reason for discarding these safety devices. I saw a whole roomful of chippers the other day, and all of them were wearing goggles. They were good goggles and they had gotten to the point where they asked for them, rather than having to be urged to use them. When you offer the workman a satisfactory and workable guard you will rarely have any great difficulty in getting him to use it.

Now another point which has been brought out. I deny absolutely that you cannot reach the old man. The older man is more conservative and more 'sot' in his ways than a younger man, but the younger man is a good deal more frivolous. I tell you that the older men in the employ of industrial establishments are intelligent men; they are not by any means so reactionary as is sometimes intimated by those who talk about them. It is not impossible by any means to reach and convince the older men in the industries."

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OF THE

PENNSYLVANIA

Department of Labor and Industry

JOHN PRICE JACKSON, Commissioner

A BULLETIN OF INFORMATION FOR THE PUBLIC

DECEMBER, 1914

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1915

PERSONNEL OF THE DEPARTMENT OF LABOR AND INDUSTRY.

The Commissioner, who has charge and direction of the Department, is John Price Jackson.

The Industrial Board consists of:

George S. Comstock, Mechanicsburg; James C. Cronin, Philadelphia; John P. Wood, Philadelphia; Mrs. Samuel Semple, Titusville; John Price Jackson, Chairman, and Louis A. Irwin, Secretary of the Board.

The Chief of the Bureau of Inspection is Lew R. Palmer, who is assisted by the members of the Division of Industrial Hygiene given below; W. H. Blakeslee, Medical Inspector; Elizabeth B. Bricker, Medical Inspector; Jacob Lightner, Supervising Inspector for Philadelphia; Francis Feehan, Supervising Inspector for Pittsburgh; district inspectors, etc.

The Division of Industrial Hygiene and Engineering consists of John C. Price, Chief of the Division and Chief Medical Inspector; John H. Walker, Civil Engineer and fire prevention expert; Richard M. Pennock, Mechanical Engineer and expert in heating and ventilation; John S. Spicer, Chemical Engineer. The Commissioner and Chief Inspector are members ex officio of this Board.

The Chief of the Bureau of Statistics and Information is Alfred R. Houck, who is assisted by Wilson I. Fleming, Assistant Chief; W. H. Horner, Statistician; Collectors of Statistics, clerks, etc.

Richard M. Pennock is Chief of the Division of Accidents Reports.

H. H. Wheaton is Chief of the Division of Immigrant Investigation. This Division is attached to the Bureau of Statistics and Information.

A permanent Chief has not yet been appointed for the Bureau of Arbitration and Mediation. The Acting Chief, F. P. Vincent, is assisted by members of the Department.

The Attorney for the Department is Richard W. Williamson, assisted by Howard Benton Lewis.

James A. Steese is Chief Clerk and has associated with him bookkeepers and stenographers.

Publications are under the general direction of the Division of Hygiene with John S. Spicer acting as Editor.

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NEW ACCIDENT REPORT FOR 1915.

The accident report which has now been in use for a year was found to be objectionable in some respects. It was thought best to try to inaugurate a standardized accident report which would be acceptable to as many various states and organizations as are concerned in the gathering of statistics concerning industrial accidents. The criticism was often offered that the present accident report was too cumbersome and involved considerable time and expense in filling out. Accordingly, it was suggested that in making up this standardized report it should be limited to only those questions which were of absolute necessity, in order to reduce it to a minimum.

Representatives were appointed by the Bureau of Labor Statistics of Washington, D. C., the Workmen's Compensation Service Bureau of New York, the American Association for Labor Legislation, Labor Organizations, Manufacturers' Associations, Casualty Insurance Companies, the National Safety Council and the State Labor Bureaus of New York, Ohio, Wisconsin, Michigan, and Pennsylvania, and after many meetings held in various cities of the country, a standardized accident report was adopted. The size of this report and the spacing were designed so that it could be filled out readily on a typewriter and would fit standard filing cabinets.

Feeling that this report would be much easier to be filled out by the employers of this Commonwealth and that the comparison of statistics with other states would be simplified thereby, this Department has adopted the same and it will be in use in this State after the first of the year. The sending out of the new blanks has been started and will be completed as soon as possible. Any persons who should have copies of the same and have not received them by the time this article is published should immediately notify the Department to that effect and request the requisite number of blanks.

The old blanks should be destroyed and not used after the 31st of December, 1914. Following will be found a copy of the accident report as adopted. If any information is desired on the same, it will be cheerfully given by addressing the Chief of the Division of Accident Reports, Bureau of Statistics and Information, Department of Labor and Industry, Harrisburg, Pa.

1 EMPLOYER, PLACE AND TIME	a. Employer's name ..... b. Office address, Street and No.,..... City or village..... c. Business (goods produced, work done, or kind of trade or transportation) ..... d. Location of plant or place of work where accident occurred..... ..... If not at office address, Street and No.,..... City or village..... e. Date on which accident occurred..... f. Hour of day..... g. Hour injured person began work that day.....
2 INJURED PERSON	a. Name..... Address..... b. Sex.....c. Age.....d. Single, married, widowed or divorced..... e. No. of children under 18 years.....f. Speak English?..... Nationality and Race.....g. Occupation when injured..... In what department or branch of work?..... Was this regular occupation?.....If not, state regular occupation..... h. Length of experience both here and elsewhere in occupation followed when injured..... i. Piece or time worker.....j. Working hours per day..... k. Working days per week.....
3 CAUSE	a. Name of machine, tool or appliance in connection with which accident occurred ..... By what kind of power driven?.....Hand or mechanical feed?..... Part on which accident occurred..... b. Was it safeguarded?.....c. Describe in full how accident happened..... ....
4 NATURE AND EXTENT OF INJURY	a. State exactly part of person injured; nature of injury, and loss of member, if any..... b. If injury resulted in death, give date.....and Physician's statement of cause .... c. Attending physician or hospital where sent; name and address..... ..... d. Has injured person returned to work?.....If so, give date and hour..... e. No. of days lost due to injury.....f. Earnings per day$..... Amount $.....g. If injured person has not yet returned to work, state physician's estimate of probable length of disability on account of accident..... .....

Date of report.....Made out by.....

On the reverse side of the blank will be found the following instructions regarding the reporting of accidents:

"No report will be accepted on any form other than this. All questions must be answered in full, or this report will be returned for correction.

"Notice of all serious and fatal accidents with their causes must be sent to this Department within twenty-four hours. A detailed report on this blank of such accidents and also all other accidents which cause a loss of employment of two days or more duration must be sent in within thirty days of the date upon which the accident occurred. Where possible, the detailed reports should be mailed on the first of each month.

"The employer is to consider as serious all accidents which cause the loss of a major member, such as the eye, hand or foot, or which in the opinion of the attending physician will cause a loss of employment of thirty days or more."

NEW STANDARD CODE OF THE CAUSE OF ACCIDENTS.

This Department has been endeavoring, as far as possible, to standardize all reports which must be submitted to the Department according to law. In view of the fact that a standard accident report has now been adopted by various State Departments and organizations which collect statistics concerning industrial accidents, it is necessary to have a standard code of the cause of accidents. This is desirable as it will enable various bureaus collecting accident statistics to compare facts and determine from which causes the most accidents occur. This having been determined, it would then be possible to take up and devise various methods for the prevention or elimination of like accidents from these causes in the future.

A committee similar to the one which adopted the standard accident report was appointed by the same representative bodies and after various meetings and discussions, agreed that the accompanying code should serve as a tentative standard. This Department has also adopted this and will put it into effect in connection with the standard accident report on the first of January, 1915.

It is hoped that all the other states will adopt it and within a short time comparisons will then be able to be made which will be of great value to the public at large.

In this connection, it might be well to note that the Department has appointed representatives on other committees which have been organized for the purpose of preparing a standard code of the injuries caused by the accidents and also a standard classified code of the industries of the states.

The Standard Code of the Cause of Accidents follows:

I. MACHINERY:

1. Boilers—Steam Pipes, (including explosions).
2. Prime movers, (engines and motors).
3. Transmission apparatus.
4. Working machines:
   1. Adjusting machines at work.
   2. Starting.
   3. Operating and feeding.
   4. Stopping.
   5. Oiling.
   6. Cleaning.
   7. Repairing.
   8. Breaking of machine at work.
   9. Flying objects.
   10. All other.
5. Hoisting apparatus and conveyors.

II. EXPLOSIVES, ELECTRICITY, FIRES, HOT AND CORROSIVE SUBSTANCES.

1. Corrosive substances.
2. Electricity.
3. Explosives.
4. Hot substances and flames.
5. Conflagration.

III. FALLING OBJECTS.

1. Rock and earth.
2. Collapse of buildings and walls.
3. Collapse of scaffolds and stagings.
4. Collapse of piled up material.
5. Objects dropped by other persons.
6. Objects falling from trucks or vehicles not loading or unloading.
7. Objects falling from buildings, trestles or scaffolds.
8. All others.

IV. FALL OF PERSONS.

1. From ladder.
2. From scaffolds or platforms.
3. From vehicles.
4. From structures in course of erection.
5. From other elevations (all others).
6. Into excavations.
7. Into other openings.
8. On level.
9. All others.

V. HANDLING OF TOOLS AND OBJECTS.

1. Tools in hands of injured person.
2. Tools in hands of fellow workman.
3. Handling sharp objects.
4. Loading and unloading.
5. Carrying and lifting objects—not loading or unloading.
6. All others.

VI. POWER VEHICLES.

1. On track.
2. Not on track.
3. On water.

VII. STEPPING ON SHARP OBJECTS.

1. Nails.
2. All others.

VIII. RUNNING INTO OR STRIKING AGAINST OBJECTS.

IX. POISONOUS SUBSTANCES.

X. MISCELLANEOUS.

1. Flying objects not from machines, tools or explosives.
2. Animals.
3. Doors, windows and gates exclusive of elevator gates.
4. Asphyxiation and suffocation.
5. Lightning.
6. Heat prostration.
7. Frost bites.
8. Drowning.
9. Intentional violence.
10. All others.

THE VALUE OF EYE GOGGLES.

In attempting to inaugurate a safety movement in their shops. many manufacturers find great difficulty in pursuading their workmen to use eye goggles. Notwithstanding the fact that these goggles are in most instances given to the workmen without cost, some of them feel disposed not to wear them. They claim it is impossible to see their work clearly and that the goggles do not fit them and give many other different excuses for not wearing them.

The Department of Labor and Industry has been endeavoring to show the value of these goggles and in cases where this complaint has been made, it has usually been found that the goggles were unsuited for the purpose for which they were intended. It has been discovered that the kind of goggles used were usually the cause of complaint. A great deal of care must be exercised in selecting the proper type of goggle which is to be used for a particular kind of work. If this is done and the use of the goggle is insisted upon, it is found that in a short time all complaints will cease. Especially will this be true as soon as one glass in that particular shop has been broken by a flying chip. When one man is saved from an eye injury in this manner, the other men working with him begin to think of the consequence which would have resulted if that chip should have become imbedded in his eye. They begin to realize that the broken goggle possibly saved the sight for that one eye and thereafter they are more anxious and willing to wear the goggles at all times.

Some people believe that the glass which would be shattered if a chip should strike the goggle would be almost as dangerous to the eye as the flying chip of metal. The safety engineer of one large steel company recently informed the Department that notwithstand-

ing the fact that thirty-seven goggles had been broken by flying chips of metal, yet from none of these had any shattered glass entered the eyes of the workmen. The framework of a goggle is constructed so that the glass which it surrounds, if struck by a flying chip, will be thrown in an opposite direction from the eye. The Department has been unable to find a single case where any injury was done to an eye during the use of the goggle. It can be safely assumed that the danger of injury is so slight that it may be ignored.

The Department would accordingly recommend and urge that workmen be provided with goggles in all cases where there is a possibility of material being thrown, blown or spattered into the eye. The Department has recently received from a large steel manufacturing concern in the western part of the State one hundred broken pairs of goggles, each one of which represents a serious eye injury that has been avoided. These goggles were broken by flying chips of steel during three month's operation of this plant. They are silent but convincing witnesses of the value of eye goggles.

PART II

DEPARTMENTAL REPORT, 1913–1914

FOREWORD.

It was promptly discovered after the creation of the Pennsylvania Department of Labor and Industry, on June 2, 1913, that there were no suitable safety and sanitary standards for the guidance of the inspection force. Certain states had prepared partial standards which were adaptable to some extent in Pennsylvania. Much good work had been done by the American Bureau of Safety and other public and semi-public bodies, while a few private corporations had developed satisfactory practices for their own particular purposes. It therefore became early evident, if our inspection work was to be of service to the industries of Pennsylvania, that suitable standards should be created which would enable our inspectors to act with more or less uniform intelligence and reasonableness.

The question at once arose how this enormous project could best be attacked. It is self-evident that if an attempt were made to create standards of such a character by the Industrial Board or staff of the Department without much advice from the industrialists themselves that serious harm would result. It was therefore determined to appoint committees, one for each distinct phase of industry or classification of machinery, from the officers of representative establishments, skilled mechanics, and manufacturers of the machinery belonging to each class.

Many such committees have been meeting during the past year or more, with the result that reasonable standards for safety have been adopted by the Industrial Board which largely cover the more ordinary phases of industry; while many others are rapidly nearing completion and readiness for submission to that Board.

It is desirable to add that these committees, composed of prominent industrial officers, mechanics, and others have served without compensation or even traveling expenses. While this is unjust, it has been made necessary by the size of the appropriation available for the Department's work. As this voluntary work has undoubtedly placed Pennsylvania as a leader in the standardization of safety practices, the Department is glad to make public acknowledgment for their services.

Approximately fifty thousand reports of accidents have been received by the Department. These have been tabulated as to character of accident, cause, and other details. The information thus gained has been and will continue to be of great service in the work of creating standard safety practices, since through the statistics it

was possible to find where, how, and in what number accidents occurred, and thus intelligently to determine the preventive measures necessary. The data gained from these accidents will be invaluable for the purposes of arranging rates of accident compensation to injured workmen. It may be added that the original report blank adopted for reporting accidents was one now in use in quite a proportion of our states. To eliminate the complicated and bad features of this report a large committee of representative employers was called together to draw up a more effective form, which was further modified by the National Committee on Statistics. The resultant new form will be used beginning with January 1, 1915.

In order to obtain suitable co-operation from the industries themselves, a system of direct communication between establishments and the Department has been inaugurated. Thus, there have been appointed special safety men in many of our largest industries, whose special duty it is to receive suggestions from the Department and put them into effect in their respective plants. Each one of these men is the head of a practical safety organization which includes a ramified system of committees composed both of officials and employees. These safety organizations, headed by men in semi-official contact with the Department, are being rapidly increased in number with the object of eventually having one established in every industrial establishment in the State. It is well to add that though the 1914 data has not yet been completed that numbers of the representatives named above have reported a reduction of accidents since 1913 that ranged from a very small percentage to as high as 60 odd per cent.

During the past year and a half, the various laws for whose application the Department is responsible, have been, so far as the Department can find out, fairly well and reasonably enforced. Though the Department has been required to bring between six and seven hundred prosecutions for violations of the law, by far its greatest work in this regard has been accomplished by aiding, in a friendly way, those affected to comply with the various requirements and by obtaining their willing co-operation. This work has included not only the enforcements of laws relating to conditions and hours of labor; but also the placing of hundred of thousands of safety guards; the elimination of numerous fire traps in motion picture establishments and theatres; the installation of many fire escapes, sanitary toilets, and dressing rooms; the cleaning up of unsavory bake shops; the inauguration of industrial fire drills; etc.

Large numbers of meetings or conferences of employers and employes dealing with the subjects of safety, health, and industrial prosperity have been held throughout the various industrial centres

of the State. The two most important of these were held last year and this year in Harrisburg, and each included 1,500 to 2,000 people gathered from the industrial centres of all parts of the Commonwealth. These meetings have undoubtedly resulted in accomplishing to a fairly satisfactory extent their two-fold purpose, namely, to bring to the people of the State such useful information as had been gathered by the Department, and in return to furnish the Department with valuable suggestions from those actually engaged in the industrial field. The inspectors have been gathered together in groups to aid these meetings and for the purpose of mutual study of their problems. At the two State-wide meetings held in Harrisburg the entire Department force was called in for this purpose.

Various publications called for by the terms of the law creating the Department have been issued. These include abstracts of the Labor Laws, compilations of these laws, Schedules of Labor, Accident reports, etc., a Monthly Bulletin dealing with industrial safety and health, an Industrial Directory of the State, Fire Drill and Fire Prevention Instructions, Safety Leaflets and Bulletins to the press, etc. It has been found that the Safety meetings and such publications have been potent influences in enabling the great mass of our people to comply with the law and with industrial suggestions intelligently and in giving them an understanding of the purposes thereof. This in turn has resulted in a quite general spirit of voluntary co-operation between the people and the Department, both to comply with the laws and reduce accidents and sickness.

In many cases of labor trouble, involving many thousands of employes, the Department has been enabled either to shorten the length of a strike or to prevent an actual rupture. In approximately two-thirds of all the cases dealt with, it has been successful in this work. In many instances it has called upon the National Department of Labor for aid. The service rendered in this way by the National Government has been effective and deserves acknowledgment by the State of Pennsylvania.

In accord with the provisions of the creative act, the Department has made various investigations, some of which are named below: In Philadelphia, approximately 4,000 children applied for employment certificates and were examined as to their physical qualifications. The result showed that nearly one-half of those examined needed medical attention before going to work, while nearly a score proved unfit and would have been seriously harmed had they been granted permits. This work was made possible by the Child Labor Association aiding the Division of Hygiene of the Department by furnishing compensation for a number of physicians, drawn from the Philadelphia Department of Health, and assigned to the Depart-

ment for the work. An investigation made in the tobacco industries resulted in the improvement of various insanitary practices, including the elimination to a large extent of the licking of the ends of cigars on the part of operatives. The bakeries have been carefully examined and such bad conditions found in many instances that the Industrial Board has drawn up regulations for the purpose of abolishing certain serious insanitary practices which sometimes occur. A very extensive investigation has been made into the condition of immigrants in Pennsylvania. The result of this investigation has shown a serious lack of method whereby these people can readily obtain suitable employment (see Part 2 of this report); few opportunities of an adequate character are to be found for education in the English language and our form of Government; and the majority of the foreigners are living under insanitary conditions. Acknowledgment is due here to the North American Civic League which furnished the Department, without charge, the services, for about eight months, of a most capable and experienced investigator and student of immigrant conditions. An investigation into unemployment shows great fluctuations in the size of the working force in industries studied, which employ about half a million of people. A study of the so-called "poisonous" industries was carried on for developing scientific and practical methods of reducing danger to health. A collection of data has been made of the condition of working women in commercial establishments, and a very extensive report is being completed on industrial production and wages. (See Part 2.)

The principal countries of Europe and many of our own states have found it most profitable to establish Official Labor Exchanges. Pennsylvania, it is believed, could obtain manifold returns by such an establishment, through the reduction of non-employment. A central exchange could to advantage be created at the Capitol, which should have general control over district exchanges located in various industrial centres. They could be managed by the local community but partially supported by the State.

In enforcing the Labor Laws many cases were found where unnecessary hardship is brought upon either the employer or employe or both. In order to remedy this very serious condition of affairs it appears wise to invest the Industrial Board with power to make exceptions in the application of specific laws when their purpose thereby can be maintained and the injury spoken of avoided. In the case of new laws it would be well to draw them in broad terms as has been done in the Safety Law of the State and then to empower the Industrial Board to make rules and regulations for the purpose of applying them to specific cases.

There are various items of the law which our experience indicates should be modified: Thus, undoubtedly night labor for children between 14 and 16 years of age should be eliminated and their hours of labor more reasonably regulated; there should be sufficient regulation of the street trades to prevent any young children from participating in them; it is particularly desirable that children be tested for their physical capacity before being permitted to engage in any particular vocation; and their safety and health while employed shall be carefully guarded.

Two years ago a bill was passed in Pennsylvania, making it possible for local communities to receive state aid for carrying on continuation schools. The value of such schools, where boys and girls, who must work at 14 years of age, can continue their education for a few years to the extent of from four to six hours per week, is undoubted. Both the European and the American experience has shown the possibilities, through such schools, for inproving individual physical and mental development and for the creation of a class of more skillful and intelligent workers. The experience of the Department which deals with children at work leads to the belief that we are ready for the second step in this work in Pennsylvania, namely; the making of such schools compulsory in the principal industrial centres.

The great list of accidents reported and in the Department files is a potent argument of the humane and also practical necessity of the very early adoption of a form of industrial accident compensation, which will not only compensate injury, but encourage both employers and employees to reduce dangerous conditions and practices.

The following material, Part II of the annual report of the Department covers not only the work of 1913—the Department was organized on June 2nd of that year—but also some of the statistics of 1914. This arrangement was adopted so that useful information, recently gathered could be given to the public at an early date and thus avoid its becoming useless through the lapse of time.

JOHN PRICE JACKSON.
Commissioner of Labor and Industry.

1913 REPORT
BUREAU OF INSPECTION

1913 REPORT, BUREAU OF INSPECTION.

Period Covered by Report. The former Department of Factory Inspection was not abolished by the Act creating this Department until May 31st, 1913, and consequently the figures given in this report will include work done under the supervision of the former regime. In view of this circumstance, it was originally planned to incorporate a summary of the 1913 work in the 1914 departmental report, but in order to maintain the existing chronological order it was finally decided to present the report separately. The greater part of the work accomplished during the year 1913 was in the nature of organizing and systematizing the work of the Bureau.

Scope of Work of Bureau. Under the Act of Assembly creating the Department, the Bureau of Inspection is vested with the authority "to have charge of all inspections made pursuant to the provisions of this Act." These inspections include those formerly made by the Factory Inspection Department and in addition includes inspections made necessary by the "Woman's Labor Law," the "Wire Glass Act," the "Foundry Act" and the "Mattress Act," all of which were passed during the recent session of the Legislature.

Inspectors and Inspection Districts. As a nucleus around which to build a new bureau, it was decided to retain as far as possible the deputies who formerly served under the Factory Inspection Department and they were accordingly appointed Inspectors of the First Grade. It was felt desirable to do this as these inspectors had gained valuable experience in the particular line of work in which they were engaged and were familiar with the conditions existing in their several localities.

These inspectors of the First Grade were assigned to definite districts throughout the State and were held responsible for the conditions existing in their districts. Because of the extra clerical work made necessary by these new laws, it was necessary to detail a number of the inspectors to the Harrisburg, Philadelphia and Pittsburgh offices. This necessitated the re-arrangement and consolidation of some of the inspection districts. This re-arrangement is shown on the accompanying map of the State and the districts with the inspectors assigned to each are given below.

Districts Nos. 1 to 14 inclusive, Philadelphia County—17 inspectors.

District No. 15, Chester and Delaware Counties—One Inspector.

District No. 16, Montgomery County, and a small strip of the eastern edge of Chester County—One Inspector.

District No. 17, Bucks and Northampton Counties—One Inspector.

District No. 18, Lackawanna, Monroe, Pike and Wayne Counties—One Inspector.

District No. 19, Bradford, Sullivan, Susquehanna and Wyoming Counties—One Inspector.

District No. 20, Columbia, Luzerne and Montour Counties—One Inspector.

District No. 21, Carbon and Schuylkill Counties—One Inspector.

District No. 22, Berks and Lehigh Counties—Two Inspectors.

District No. 24, Lancaster, York and Adams Counties—One Inspector.

District No. 25, Lebanon, Dauphin, Franklin, Cumberland, Perry, Juniata and Mifflin Counties—Two Inspectors.

District No. 26, Clinton, Lycoming, Northumberland, Union and Snyder Counties—One Inspector.

District No. 27, Cameron, McKean, Potter and Tioga Counties—One Inspector.

District No. 28, Centre, Clearfield and Elk Counties—One Inspector.

District No. 30, Cambria, Blair and Huntingdon Counties—One Inspector.

District No. 31, Bedford, Fulton and Somerset Counties—One Inspector.

District No. 32, Fayette, Indiana and Westmoreland Counties—One Inspector.

District No. 33, Butler, Armstrong, Clarion and Jefferson Counties—One Inspector.

District No. 34, Erie, Warren, Forest, Crawford, Mercer and Venango Counties—Two Inspectors.

District No. 36, Beaver, Lawrence, Washington and Green Counties—One Inspector.

Districts Nos. 38 to 41 inclusive, Allegheny County—Six Inspectors.

In addition to these inspectors of the First Grade there are second, third and fourth grade inspectors. The inspectors of the second grade are Jacob Lightner and Francis Feehan, who are Supervising Inspectors in charge of the Philadelphia and Pittsburgh districts respectively.

The inspectors of the third grade are Dr. W. H. Blakeslee, and Dr. Elizabeth B. Bricker, and under the direction of the Chief Medical Inspector "inspect all rooms, buildings and other places subject to the provisions of this act throughout the State, with respect to the conditions of work affecting the health of persons employed therein."

The inspectors of the fourth grade consist of John C. Price, M. D., Chief Medical Inspector; R. M. Pennock, Mechanical Engineer; John S. Spicer, Chemical Engineer, and John H. Walker, Civil Engineer.

These inspectors, who constitute the Division of Industrial Hygiene and are under the direction of the Chief Medical Inspector, have been called upon to make special inspections, especially in connection with surveys in different cities of the Commonwealth and in investigations concerning special industries. A detailed account of their activities will be found in the report for that Division.

Co-Operation in Inspections. In October, 1913, the first Annual Pennsylvania Welfare and Efficiency Conference afforded an opportunity to call all the field inspectors to Harrisburg, and made it possible to discuss with them details for standardizing the inspection work, and to outline to them the plans of the Department. These plans gave every inspector a fair chance to show that he was willing to co-operate with the new organization in carrying out the duties laid upon the Department. Realizing the enormous responsibiltiy that rests upon the Department, it was impressed upon them the necessity of securing the active co-operation of every employer and employee with whom they came into contact; thus securing the results desired by co-operation rather than by exercising the police powers vested in the Department. At this time it was also possible to impress upon them the importance of encouraging the formation of safety organizations within the industrial plants throughout the State. This policy of the Department to secure enforcement of the law by co-operation rather than by legal procedure is possible because the attitude of the vast majority of the employers of this State is to obey willingly the law when they fully understand its requirements. This disposition of the employer tends to make the work of the inspector more efficient and effective.

Inspections. During the year 1913, the inspectors of this Bureau made 32,279 inspections of 19,027 establishments employing 1,093,935 persons. Table No. 1 shows the classes of establishments inspected, together with the number of inspections made in each class and the number of male and female employees.

TABLE NO. 1

ESTABLISHMENTS INSPECTED AND NUMBER OF EMPLOYEES.

Classification of Establishments.	Number of establishments inspected.	Number of inspections made.	Male employees in establisments inspected.	Female employees in establishments inspected.	Total employees in establishments inspected.
Apartment, boarding and rooming houses,	159	283	.....	.....	.....
Bakeshops,	2,391	4,052	12,794	3,413	16,207
Colleges, schools and hospitals,	93	124	.....	.....	.....
Hotels,	282	413	.....	.....	.....
Leather and products,	347	607	22,681	5,948	28,629
Lumber and products,	1,309	2,011	54,344	2,614	56,958
Mercantile establishments,	3,138	5,171	39,889	39,566	79,455
Metal and products,	1,875	2,830	401,821	10,180	412,001
Miscellaneous industries,	5,486	9,069	203,971	77,078	281,049
Places of amusement,	564	1,040	.....	.....	.....
Public and office buildings—Halls other than places of amusement,	129	215	.....	.....	.....
Tenement houses,	10	12	.....	.....	.....
Textile establishments,	2,838	5,108	85,447	128,300	213,747
Workshops (sweatshops),	328	1,326	3,962	1,927	5,889
Inland lake boats,	18	18	.....	.....	.....
Total,	19,027	32,279	824,909	269,026	1,093,935

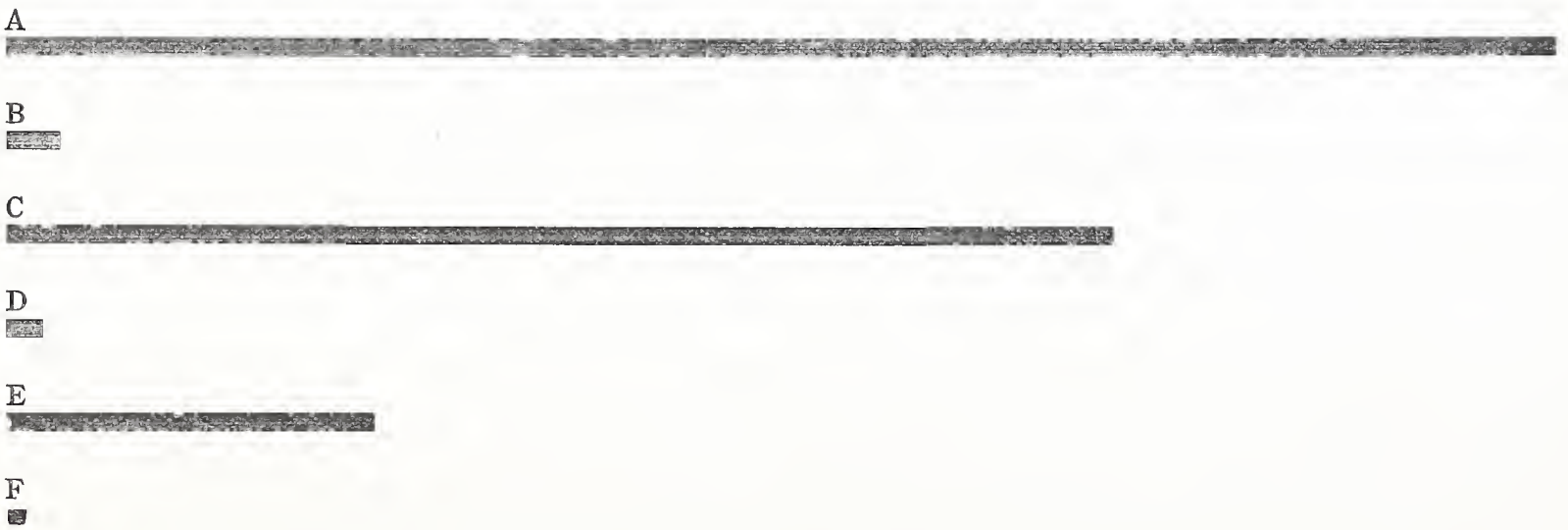
TABLE NO. 2.

STATEMENT SHOWING NUMBER OF CHILDREN EMPLOYED COMPARED WITH TOTAL EMPLOYMENT.

Classification of Establishments.	Male minors in establishments inspected.	Female minors in establishments inspected.	Total number minors employed in such establishments.	Total all employees in such establishments.	Percentage of minors employed to total employees.
Apartment, boarding and rooming houses,	.....	.....	.....	.....	.....
Bakeshops,	242	329	571	16,207	3½%
Colleges, schools and hospitals,	.....	.....	.....	.....	.....
Hotels,	.....	.....	.....	.....	.....
Leather and products,	669	471	1,140	28,629	4%
Lumber and products,	982	169	1,151	56,958	2%
Mercantile establishments,	2,221	1,305	3,526	79,455	4½%
Metal and products,	2,208	556	2,764	412,001	6/10%
Miscellaneous industries,	5,855	4,346	10,201	281,049	3½%
Places of amusement,	.....	.....	.....	.....	.....
Public and office buildings—Halls other than places of amusement,	.....	.....	.....	.....	.....
Tenement houses,	.....	.....	.....	.....	.....
Textile establishments,	5,422	9,819	15,241	213,747	7%
Workshops (sweatshops),	35	23	58	5,889	1%
Total,	17,634	17,018	34,652	1,093,935	3%

TABLE NO. 2A.

CHART SHOWING NUMBER OF CHILDREN EMPLOYED COMPARED TO TOTAL EMPLOYMENT IN THE VARIOUS ESTABLISHMENTS INSPECTED.



KEY TO LETTERS.

A—Total number of employees,	1,093,935
B—Total number of minors,	34,652
C—Total male employees,	824,909
D—Total male children,	17,634
E—Total female employees,	269,026
F—Total female children,	17,018

Instructions Issued. During the year, 4,302 instructions were issued for the improvement of various conditions in the establishments inspected. Table No. 3 shows the classes of improvements effected by these instructions. It will be observed that the largest number of instructions issued called for the guarding of machinery and dangerous places. The figures given are merely the number of separate instructions issued and do not represent the actual work accomplished as they do not take into account the individual items covered by such instructions. For instance, in this particular class, 1,635 instructions were issued for the placing of 6,540 guards, or an average of four to each instruction. It can be safely assumed that the same proportion is approximately true for the other classes. Accordingly, nearly 17,000 improvements were made in establishments of this Commonwealth during the year as a result of the Bureau's activity.

TABLE NO. 3.

STATEMENT OF INSTRUCTIONS ISSUED BY INSPECTORS FOR VARIOUS IMPROVEMENTS.

Classification of Establishments.	Instructions issued to guard machinery and dangerous places.	To guard and improve elevators.	To erect and improve fire escapes.	For fire prevention and fire protection.	To provide toilets.	To provide dressing rooms.	To improve heating, lighting, ventilation and sanitation.	Total instructions issued.	Permits issued.
Apartment, boarding, rooming houses,	.....	.....	50	3	4	.....	.....	57	.....
Bakeshops,	61	.....	1	4	18	2	823	909	73
Colleges, schools and hospitals,	.....	.....	29	.....	.....	.....	.....	29	.....
Hotels,	1	.....	90	1	.....	.....	1	93	.....
Leather and products,	51	2	1	1	17	.....	19	91	.....
Lumber and products,	261	5	1	3	45	1	52	368	.....
Mercantile establishments,	25	15	18	3	45	7	57	170	.....
Metal and products,	420	17	6	3	83	12	80	621	.....
Miscellaneous industries,	422	45	47	10	112	29	127	792	.....
Places of amusement,	.....	.....	19	132	1	.....	5	163	.....
Public and office buildings, halls other than places of amusement,	.....	.....	27	40	.....	.....	.....	67	.....
Tenement houses,	.....	.....	4	.....	.....	.....	.....	4	.....
Textile establishments,	373	15	21	38	229	87	121	884	.....
Workshops (sweatshops),	18	.....	.....	6	10	.....	17	51	290
Inland lake boats,	3	.....	.....	.....	.....	.....	.....	3	.....
Totals,	1,635	99	314	250	564	138	1,302	4,302	363

Prosecutions. Because of failure to comply with instructions given and of violations of the labor laws, the inspectors of the Bureau were directed to enter suit against offenders in 609 cases. Table No. 4 shows the classification of establishments in which the violations occurred and the nature of these violations. It will be observed that the largest number of prosecutions were made necessary by violation of the Child Labor Laws. The other prosecutions were brought for failure to comply with instructions issued for the installation of

safeguards, erection of fire escapes, violations of the Female Labor Law and other miscellaneous offenses. The fines received as a result of these prosecutions amounted to $5,973.00, and were covered into the State Treasury as prescribed by law.

TABLE NO. 4.

PROSECUTIONS FROM JUNE 2, 1913 TO JANUARY 1, 1915.

Offence.	Convicted.	Pending.	Discharged.	Cases.	Fines.
Minor,	285	36	18	339	$3,078 00
Woman's act,	223	4	5	232	2,330 00
Toilets,	3	.....	.....	3	75 00
Non-compliance,	9	2	1	12	130 00
Bakeries,	7	.....	1	8	175 00
Moving picture,	2	.....	.....	2	50 00
Refusing information,	2	.....	.....	2	10 00
Safeguards,	2	.....	.....	2	50 00
Mattresses,	1	.....	.....	1	25 00
Fire escapes,	2	2	3	7	50 00
Act 267,	.....	1	.....	1	.....
Total,	536	45	28	609	$5,973 00

Boiler Inspections. Steam boiler inspections to the number of 18,037 were reported to this Bureau during the past year. It was realized in the early stages of the organization of the new Department that this work, under the existing law, could not be carried on in a satisfactory manner. Accordingly, the whole subject was referred to the Mechanical Engineer of the Department, R. M. Pennock. In this connection I believe it is proper to submit Mr. Pennock's report which I deem worthy of serious consideration:

"At the present time the boiler inspection situation in the State of Pennsylvania is in a very unsatisfactory condition. The following Section 19 of the Act approved May 2nd, 1905, is the only law covering this subject in the statutes of the State:

'All boilers used for generating steam or heat in any establishment shall be kept in good order, and the owner, agent or lessee of such establishment shall have said boilers inspected by a casulty company in which said boilers are insured, or by any other competent person approved by the Chief Factory Inspector, once in twelve months, and shall file a certificate showing the result thereof, in the office of such establishment, and shall send a duplicate thereof to the Department of Factory Inspection. Each boiler or nest of boilers used for generating steam or heat in any establishment shall be provided with a proper safety-valve and with steam and water gauges, to show, respectively, the pressure of steam and the height of water in the boilers. Every boiler house, in which a boiler or nest of boilers is

placed, shall be provided with a steam gauge properly connected with the boilers, and another steam gauge shall be attached to the steam pipe in the engine house, and so placed that the engineer or fireman can readily ascertain the pressure carried. Nothing in this section shall apply to boilers which are regularly inspected by competent inspectors, acting under local laws and ordinances.'

"A study of this section will show that the lives and property of citizens of Pennsylvania are very poorly protected against boiler explosions and boiler trouble in so far as legislation is concerned and that of necessity the control and supervision of boilers, their installation and operation, is in a very chaotic condition.

"It will be noted that there are a great many classes of steam vessels, such as digesters, vulcanizers, super-heaters, driers, steam tanks and receivers, etc., which normally carry full boiler pressure and are subject to practically the same hazards as the boiler itself, for which no inspection is required. Another class of pressure vessels which might be mentioned in this same connection are air tanks and receivers and also the pressure tanks used in connection with some classes of elevator systems; in fact, all vessels normally working under pressure should be regularly inspected. On the other hand, there are a few pressure vessels which should be definitely excluded, such as boilers under the jurisdiction of the United States Government where a second inspection is superfluous, and where the jurisdiction of the State is in question; also, there are undoubtedly a great number of low pressure heating systems, operating under 10 or 15 pounds pressure for which State supervision is probably unnecessary.

"The requirement that boilers should be equipped with 'a proper safety-valve, a steam gauge and a water gauge,' and that this equipment will then make them safe is absolutely ridiculous. A 'proper safety-valve' will no more insure a boiler against explosion than no valve at all. In fact, it may, if the boiler is operated by an inexperienced or careless fireman, give him a false sense of security, so that the valve in itself is a real menace rather than a protection. If inspected but once a year (which is the legal requirement), there is no assurance whatsoever that the valve will operate when necessary.

"As will be noted, there is nothing in this law which will guide an inspector in setting a safe working pressure for any individual boiler. Each inspector is governed by his own experience or rules of his own making so that there is no uniformity in the matter throughout the State as a whole. This matter is one that is frequently brought to the attention of the Inspection Bureau of the Department of Labor and Industry and is one which should be made a matter of definite legislation.

"The whole boiler situation is in such a condition that immediate action is imperative. The only feasible method of handling the matter is by the adoption of a definite boiler code by which the construction and installation of a boiler will be under legal control, as will also the supervision from the making of the steel to the operation of the boiler. This code should go fully into all technical questions relative to the inspection and operation of boilers already in use, in addition to new installations.

"A code of this sort would be very far reaching in its benefits to the Commonwealth. It would insure a very much better class of boilers throughout the State and would undoubtedly very materially reduce the number of boiler accidents and the hazards connected with boiler operation.

"In order to enforce such a code properly, boiler inspections made by approved Casualty Companies and their inspectors should be accepted as at the present time, but the boilers not insured by the Casualty Companies should be inspected by inspectors who are in the pay and under the direct definite control of the Department of Labor and Industry. In order to do this properly, a division of boiler inspectors should be created in the Department of Labor and Industry. At the present time, the inspectors approved by this Department make inspections when and where they will and charge whatever fee they deem advisable or can collect, and are not under any definite supervision. This matter is entirely too vital in importance to be handled in such a manner. It is probably entirely proper for a fee to be charged by the State Inspectors for the inspection of a boiler, but this fee should be uniform throughout the State and should be paid to the State Treasury and not to the individual making the inspection.

"The creation of such a division of boiler inspection would make it possible for the Department of Labor and Industry to make sure that all boilers in the Commonwealth are inspected. At the present time, with the force available, it is practically impossible to make sure that all boilers of the Commonwealth are inspected annually, and there is no doubt but that a great number are not so inspected. This probably applies with considerable emphasis to that large class of boilers which are used in connection with hoisting engines, saw mill engines and other semi-portable plants. These are frequently operated by very inexperienced persons and present an imminent danger which should be more definitely supervised by the State.

"Another phase of the boiler situation which must be considered in connection with the adoption of a code is, the advisability of legislation requiring the licensing of engineers and firemen. At the present time in Pennsylvania, a boiler may be constructed by the most approved method, and of the best quality of steel, be inspected as re-

quired by law once a year, and yet when placed in a fine building on one of the main thoroughfares of the city, that boiler may be operated by some one absolutely ignorant of the first principles of its handling and inexperienced in its operation. The hazards of this possibility would not be materially lessened by an annual inspection. The only method of overcoming this hazard and knowing that the boiler is operated in a reasonably safe manner is by having assurance that the man in actual control is qualified for his work. This is done in several states by examining and licensing such men, and it is felt that it is of such great importance that the expense necessary would be entirely justified.

"It is believed that the enactment of laws establishing a boiler code and requiring the licensing of engineers and firemen is essential to the welfare of the State. It should not be necessary to postpone consideration of such laws until some great catastrophe has destroyed many lives and much property."

Special Surveys. Soon after the organization of the Inspection Bureau, special surveys were made of the cities of Altoona, Scranton, Harrisburg, Erie and Philadelphia. A thorough inspection of the various establishments located in these several cities was made and wherever serious violations of the law were discovered they were ordered to be corrected. Minor violations were pointed out and in practically every instance the co-operation of employers was secured without recourse to legal procedure. It was found that many violations were due to the fact that previous to this time no inspections had been made in establishments employing less than five persons and therefore, the employers in such establishments were, in many cases, not familiar with the requirements of the laws.

Investigation of Accidents. It has been impossible, owing to the limited inspection force, to make investigations of all of the preventable accidents which have been reported to the Department during the last year. The Bureau however has consistently endeavored to investigate most of the serious and all of the fatal accidents which have occurred in connection with machinery, trying to find out the exact cause of the accident and then endeavoring to offer suggestions which if put into effect would prevent a recurrence of the same type of accident. Work of this kind will, no doubt, help to materially reduce a great many of the preventable accidents which are now occurring in this State.

Plans of Places of Amusements. Early in the development of the Bureau of Inspection the necessity for formulating a method for the examination of plans of places of amusement became apparent and to accomplish this all such plans are now sent to this office and carefully examined to ascertain that they satisfy the requirements of the law.

It is thought advisable at this time to call attention to the necessity of having more rigid requirements for motion picture theatres. Owing to the fact that audiences which patronize motion picture theatres are composed largely of women and children and are therefore particularly susceptible to panic, it is recommended that more rigid building rules and regulations be enacted. These should specify in detail the number and arrangement of the seats between aisles, the number, size and location of exits, the proper heating and ventilating systems to be used, the fire prevention and fire protection apparatus to be installed and any other features which would tend to make buildings of this character more safe. As a means of supplying a standard, a committee representing owners, architects, and others competent to give expert advice, was called together and after much deliberation adopted specifications. The detailed report of this committee is of sufficient importance to be given in full and it is suggested that it be used as a basis of future legislation. The report will be found in the appendix.

Fire Escapes. The Department has jurisdiction over the construction of fire escapes and their location on buildings where persons are "accommodated, assembled, employed, lodged or residing therein." In the enforcement of the provisions of this Act, there have been erected or improved, under the directions of the Bureau, 314 fire escapes.

Wire Glass Act. Closely allied to the work of supervising the erection of new fire escapes is the enforcement of the "Wire Glass Act," which was passed at the last session of the Legislature. This Act provides that "all windows opening upon, over or under external fire escapes shall be of fire-proof construction with wire glass therein and with metal fire-proof frames around the windows." It also provides "that all exits to external fire escapes shall be by means of doors of fire-proof construction." The purpose of such fire-proofing is to prevent smoke and flame making a fire escape impassable before all the occupants of a building have reached the ground in safety. The Bureau has endeavored to enforce these provisions in the construction of all new fire escapes.

Fire Drills. The efficiency demonstrated recently by organized fire drills in the saving of life has shown the wisdom of the enactment of the law requiring fire drills to be held monthly in various industrial establishments. The inspectors have ascertained that this law was being generally observed and in those establishments where no drill had been held in the past they have assisted the management in inaugurating the movement. The fire drill instructions prepared by the Board of Industrial Hygiene have proved very valuable in this work.

Female Labor Law. On November 1st, 1913, the new "Female Labor Law" became operative. In order to acquaint the employers of the State with the requirements of this law, it was necessary for the inspectors to devote a large amount of time to visiting establishments where females were employed. They also endeavored, in all cases where their help and advice would prove beneficial, to assist the managements to arrange the schedules of hours made necessary by the law. This law has been in effect for such a short time that it is impossible to give any authoritative conclusion regarding the results which will be derived from its operation, but the indications are that it will prove very generally beneficial.

Employment of Minors. In the 19,027 establishments which were inspected during 1913, there were employed 34,652 minors, 17,634 of whom were boys and 17,018 were girls. These inspections revealed the fact that approximately 2½ per cent. of these children were illegally employed. Table No. 5 shows in detail the nature of the violation and the class of establishments in which these violations occurred. As a result of the illegal employment found by the inspectors of this Bureau during the first year and a half of its operation, there were approximately 500 prosecutions brought against persons who employed minors illegally.

TABLE NO. 5.

STATEMENT OF CHILDREN DISMISSED FOR ILLEGAL EMPLOYMENT DURING 1913.

Classification of Establishments.	Children dismissed for want of certificates.	Children dismissed for illiteracy.	Children dismissed account of under age (14).	Total number of children dismissed.
Bakeshops,	18	.....	1	19
Leather and products,	11	.....	2	13
Lumber and products,	12	.....	.....	12
Mercantile establishments,	239	.....	22	261
Metal and products,	23	1	2	26
Miscellaneous industries,	239	3	17	259
Textile establishments,	201	2	16	219
Workshops (sweatshops),	32	.....	5	37
Total,	775	6	65	846

Foundry Act. Owing to the fact that the Act requiring toilets and washrooms in connection with foundries is indefinite in regard to their number, kind and equipment, it has been extremely difficult to enforce the provisions of this Act with justice to all.

The Act providing for toilets and washrooms to be installed in foundries does not specify the detailed equipment which should be installed in various sized establishments. Owing to the fact that foundries in this State may employ from only a few to several hundred persons, it is obviously impossible to expect equipment sufficient for a small foundry to be adequate for one of the largest types. This condition is not provided for under the law and accordingly it is impossible for either inspector or owner to know the legal equipment for any particular establishment. Accordingly the Industrial Board of the Department has been asked to draft rules and regulations covering these points. The adoption of such standards will then enable the inspectors to enforce the provisions of this Act with justice to all concerned.

Blower Act. In enforcing the provisions of this Act the Bureau has been governed by the recent ruling of the Attorney-General's Department. This ruling was to the effect that the law was applicable to all establishments wherein wheels were used for dry grinding or polishing more than three hours in each twenty-four hours, even though different employees used the same wheel during this period. In complying with this Act, many establishments have installed various kinds of exhaust systems, some of which were inefficient. To overcome this difficulty the Industrial Board is drafting standards for such installations. In the future, it is expected that plans and specifications of such installations will be submitted to the Department for approval before construction work has been started.

Inspector's Report Forms. The old form of inspector's report which was used during the past year will be found in the appendix, together with the new forms adopted by the Department. These new forms will be put into use in the near future.

Accident Prevention. The Bureau desires to call attention to the splendid work that is being done throughout Pennsylvania in the accident prevention field. Great as has been the national development in this movement, there is no question but that the practice of plants within Pennsylvania compares most favorably with the best practice developed to date.

The inspectors frequently write to the Bureau, directing attention to some new idea that has been developed in one of the plants within their districts. These plants are not today limited to the larger organizations, which have for some years placed their safety and sanitary work under the direction and supervision of competent men, who devote their entire time to the subject; but they also include a multitude of the smaller concerns which have been developing within their plants an organization commensurate with the size of the plant and the risk of the industry in which they are engaged.

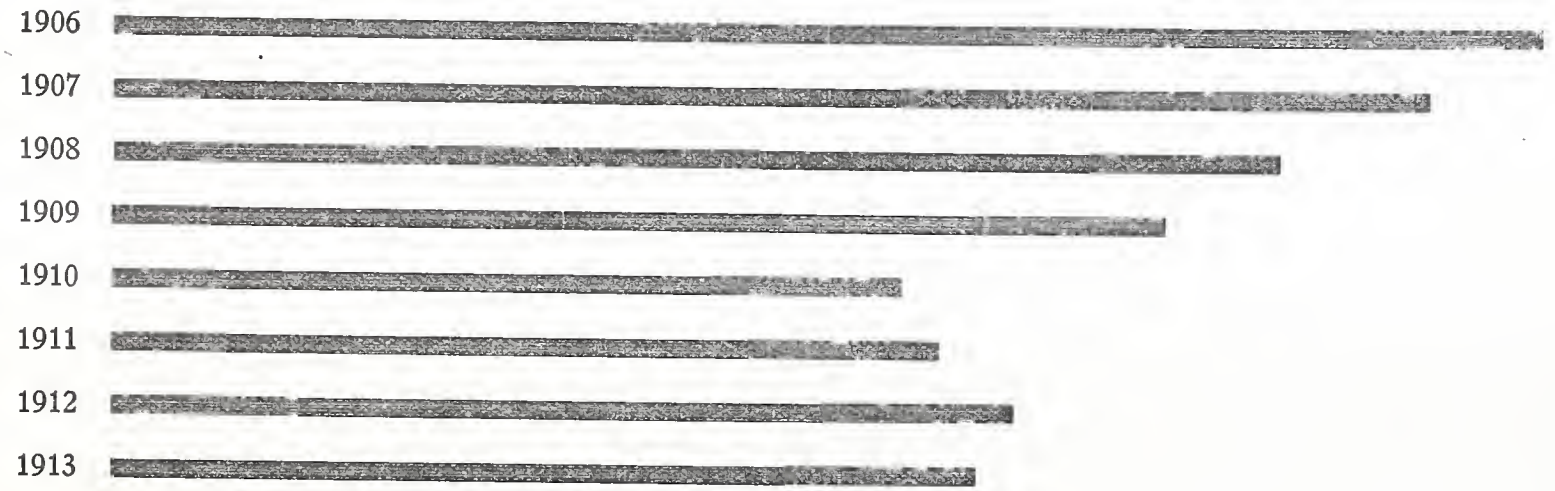
Already the advantages of establishing a point of contact between the industrial establishments and this Department have become apparent. In several cases this interest within the plant has brought about a more prompt compliance with instructions issued by the inspector. In many cases the inspector has been called upon to suggest means of overcoming some unsafe practice. He is frequently able to do this owing to the experience gained through inspections of other plants.

One plant reported, after having a safety organization for three years that they had reduced their accidents, figured on a lost time basis per 100 men employed, from 2.40 per cent. for first quarter of 1910, to .48 per cent. for the first six months of 1914, a reduction of 80 per cent.

One corporation, which operates some of its largest plants within the State of Pennsylvania publishes data which demonstrates conclusively that safety organizations within industrial establishments are effective. The published data, covering some 200,000 employees, shows that since their safety organization has been developed, over 11,000 serious and fatal accidents have been prevented. (See Chart C). These figures become more impressive when it is realized that each "serious case" recorded, represents a disability of 35 or more days.

CHART C.

CHART SHOWING COMPARATIVE NUMBER OF ACCIDENTS IN A LARGE STEEL COMPANY, 1906 TO 1913 INCLUSIVE.



NOTE:—A change in the system of reporting accidents made January 1, 1911, resulted in more accidents being reported and classed as serious, than formally was the case.

DURING THE PERIOD REPRESENTED ABOVE 11,074 EMPLOYEES WERE SAVED FROM SERIOUS INJURY, USING THE 1906 RECORD AS A BASIS.

Some light can be thrown upon the methods pursued in this organization in its safety campaign by quoting from one of their leading safety experts, who, in analyzing the problem, says:

"It is clear to the student of this subject that in order to procure efficient accident prevention in our industries, three broad branches of the work must be undertaken, viz:

Organization
Safeguarding
Education

Full efficiency cannot be attained if one of these branches is neglected.

Experience leads us to place their relative values as follows: (based on possible efficiency of 100%).

Organization,	45%
Education,	30%
Safeguarding,	25%

Subdividing—

Organization, 45%.

Attitude of officers,	20%
Safety committees,	20%
Inspection (workmen),	5%

Education, 30%.

Instruction of men,	15%
Prizes,	9%
Signs,	3%
Lectures,	3%

Safeguarding, 25%.

Safety devices,	17%
Cleanliness,	5%
Lighting,	3%
	100%"

Further experience may change these figures to some extent, but it is evident to all who have made a study of safety work that this outline points to many vital elements in our problem of Accident Prevention, the principle of which is that SAFEGUARDS ALONE CAN PREVENT BUT A SCANT TWENTY PER CENT OF OUR ACCI-

DENTS. The results obtained emphasize the fact that a plant management cannot reduce the accidents within its plant to a reasonable minimum without the co-operation and education of the employees. No more can the Department of Labor and Industry reduce the accidents in the State of Pennsylvania to a reasonable minimum without the co-operation and education of the individual plant managements.

OLD INSPECTION REPORT.

Form 1. PENNSYLVANIA

DEPARTMENT OF FACTORY INSPECTION.

DEPUTY'S REPORT.

1. Date, _____ 19____
2. Report Number, _____
3. Is it a first, or what, inspection? _____
4. Factory, Bakery, Hotel, or what? _____
5. Number of stories, _____
6. Name of proprietor, or owner, _____

_____

7. Postoffice, _____; No. and Street, _____; No. of floor, _____
8. County, _____
9. If a *Factory*, its chief product, _____
10. If a *Workshop*, its product, _____

    If goods are made on sub-contract, for whom made

    (Name), _____

    (Address), _____
11. Number of all employes: Males _____; Females _____

    Total, _____
12. Number of minors between 14 and 16 years of age; boys _____; girls, _____
13. Number of minors dismissed from work. Under 14 years _____; without certificate, _____; illiterate, _____

    Total dismissed, _____
14. Have your previous orders been obeyed? _____

    If not, what are they, and why not? _____

    _____

    _____
15. What, if any, violations of law discovered? _____

    _____

    _____
16. What, if any, orders issued? _____

    _____

    _____

    _____

    _____ Deputy.

    District No. _____

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

INSPECTORS DAILY REPORT.

Date.....19 . County..... District..... Expense $.....

NAME OF ESTABLISHMENT VISITED	ADDRESS Give Street, Number and Post Office	HOURS DEVOTED TO WORK AS LISTED BELOW													
		Factory Insp.	Mercantile Insp.	Theatre and M. P.	Bakery Insp.	Building Insp.	Inland Nav.	Mattress Insp.	Accident Inves.	Complaints	Visits	Prosecutions	Miscellaneous	Traveling	

Form 1 12-3-6-14-10,000. THIS REPORT TO BE MAILED DAILY TO CHIEF OF BUREAU OF INSPECTION, HARRISBURG, PA.

NAME OF ESTABLISHMENT VISITED	ADDRESS Give Street, Number and Post Office	HOURS DEVOTED TO WORK AS LISTED BELOW													
		Factory Insp.	Mercantile Insp.	Theatre and M. P.	Bakery Insp.	Building Insp.	Inland Nav.	Mattress Insp.	Accident Inves.	Complaints	Visits	Prosecutions	Miscellaneous	Traveling	

EXPLANATORY REMARKS:

.....

.....

My address for.....days will be.....

..... *Inspector.*

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

FACTORY AND MERCANTILE INSPECTION REPORT.

County_____, District_____, Report No. _____

Firm Name_____, Street and Number_____, Post Office_____,

Kind of Business_____, President_____, Gen. Mgr. or Supt. _____,

No. of buildings. No. of stories. Construction of buildings. No. floors occupied.

Employes.	Office Help, Messengers, Etc.	Otherwise Employed.	Total No. Employed.	Max. Daily Hours.	Max. Weekly Hours.	Minors Dismissed.	Number.
Male (over 18), ...							
Male (16-18), ...						No certificate, ...	
Male (14-16), ...							
Female (over 21), ...						Under 14, ...	
Female (16-21), ...							
Female (14-16), ...						Illiterate, ...	
Total, ...							
						Total, ...	

I hereby certify above statement is correct.

Date_____

_____

Manager or Superintendent.

No. of safeguards recommended_____, No. of instructions given regarding sanitation_____,

No. of safeguards recommended for fire prevention_____, Have all previous instructions been obeyed_____, Yes or No.

If not, give number and reason_____, Any instructions given_____, Yes or No.

CHILDREN:
Register kept,..... All cert. filed,..... No. missing,..... No. employed in prohibitive trades or occupations,.....
WOMEN AND MALE MINORS:
Seats for females,..... Use permitted,..... Females 16 to 21 not work before 6 a. m.,..... Not after 9 p. m.,..... Employed not more than 6 days or 54 hours in a week,..... Not clean. or oil. machine in motion,..... Not oper. prohibited polish, buff. wheels,..... Under 18 not oper. elevators,..... meal recess,..... Period of rest,.....
LAW AND TIME CARD:
Posted in each workroom,.....
WAGES:
Check, cash, order,..... How often paid,..... Days beld back,.....
SAFETY:
Organization with engineer in charge,..... Without engineer in charge,..... First aid provided,..... Accident register kept,.....
MACHINERY:
Vats, saws, planers, gears, belts, shafting, set screws, machinery,..... guarded,..... Not spec. dangerous,..... Belt shifters,..... loose pulleys,..... Tools in good condition and repair,.....
STEAM BOILERS:
No. in use,..... Prop. safety valves,..... Water gauges guarded,..... Regular Inspect.,..... Date last inspect.,..... Cert. in office,..... Duplicate with Dept. of L. & I.....
ELECTRIC SYSTEM:
Maximum voltage,..... Standard wiring,..... Switchboard guarded,..... Switches insulated and enclosed,.....
DUST CREATING:
Grind., polish, or buff. wheels,..... Eqnipped with exhaust system,..... Sufficient,..... 3 hours continuously oper.,..... Other dust creating machinery,..... Exhaust system provided,..... Sufficient,.....
HARMFUL SUBSTANCES:
Poisons,..... Fumes,..... Dusts,..... Gases,..... Present in workroom,..... Hot water and individ. toweis prov.,..... Food taken in or eaten in workroom,..... Notice posted,..... Employes present in such room at meal time,..... Suitable lunch piace prov.,.....
VENTILATION:
Sufficient,..... Excessive heat,..... Steam,..... Gases,..... Impurities,.....
HEATING APPARATUS:
Kind,..... Safe,..... Adequate,..... Combustible material near or touching heat conductors,.....
DRAINAGE—PLUMBING:
Proper,..... Sanitary,.....
LIGHTING:
Kind, ... Safe, ... Adequate, ...
WATER CLOSETS:
No.,..... Cellar,..... Halls,..... Workroom,..... Separated from workroom,..... Yard,..... Kind,..... Repair,..... Clean,..... Lighted,..... Separate for sexes,..... Ratio 1 w. c. to males,..... Females, ...Screened,..... Ventilation,..... Obscene writing,..... Separate approach for women,..... Indoor closets practicable,..... Outside closets preferable,..... Covered passageway to water closets,..... Heated,.....
WASH ROOMS AND DRESSING ROOMS:
Prov.,..... Suitable,..... Convenient,..... .. Sink and H. & C. water service,.....
DRINKING WATER:
Prov.,..... Clean and pure,..... Covered receptacles,..... Cleaned,..... Sanitary fountains,..... No collections,.....
WORKROOMS:
Walls and Ceilings: Clean,..... Safe,..... Paint or W. W. necessary,..... Air space ample,.....
FLOORS:
Safe,..... Clean,..... Sanitary,..... Spitting not permit.,..... Cuspidors prov.,..... Over-crowded,..... Cleaned daily,.....
YARDS, AREAWAYS, UNOCCUPIED SPACES:
Clean,..... Sanitary,..... Rubbisb,.....
REFUSE:
Receptacles prov. for waste and refuse,..... Sanitary,..... Standard fireproof receptacles prov. for inflam. waste and material,..... Accumulations allowed,..... Removed daily,.....
ELEVATORS:
No..... Passenger, freight,..... Speed, higb, medium,..... Hand power,..... Car apparently safe,..... Entrance properly guarded,..... Gates, bars, chains, doors,..... Properly fastened, locked,.....
HOISTWAYS AND OPENINGS:
Enclosed,..... Bottoms clean,..... Safe,.....
STAIRWAYS:
No.,..... Location,..... Enclosed,..... Material,..... Adequate,..... Safe,..... Handralls,..... Proper treads,..... Lighted,..... External exits conform to Act 233,.....
HALLS:
Unobstructed,..... Clean,..... Safe,..... Lighted,.....
AISLES:
Adequate width,..... Unobstructed,..... Safe,.....
EXITS:
Adequate width,..... Unobstructed,..... Doors open out,..... Doors how fastened..... Windows used,.....
FIRE ESCAPES:
Adequate,..... Tested,..... Safe,..... Need painting,..... Date last painted,..... Width in feet,.....
FIRE DRILL:
Held,..... Organized,..... Monthly drill,..... Inspected drill,..... Properly conducted,..... Fire drill alarm,..... Kind,..... Condition of alarm,.....
FIRE EQUIPMENT:
Provided,..... Kind,..... Condition,..... Brigade,.....
FIRE HAZARDS EXISTING:
Kind,..... Instructions given for correction,.....
EMPLOYES' LUNCH ROOM:
Provided,..... Sanitary,.....
EMPLOYES' REST ROOMS:
Provided,..... Sanitary,.....

Name of person accompanying Inspector. Position.

Date_____.

Signed _____
Inspector.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

THEATRE AND MOTION PICTURE THEATRE INSPECTION REPORT.

County....., District....., Report No. .....

Name of Proprietor....., Name of Theatre.....,

Street and Number....., Post Office.....

Owner, Lessee, Agent of Building, ..., Address.....,

Approved plans filed with Department of Labor and Industry..... (Yes or No.) (Date.)

Size of Auditorium....., Seating Capacity.....,

Employes.	Office Help, Messengers, Etc.	Otherwise Employed.	Total No. Employed.	Max. Daily Hours.	Max. Weekly Hours.	Minors Dismissed.	Number.
Male (over 18),							
Male (16-18),							
Male (14-16),							
Female (over 21),							
Female (16-21),							
Female (14-16),							
Total,							

I hereby certify above statement is correct.

Date.....

.....
Proprietor.

No. of safeguards recommended....., No. of instructions given regarding sanitation.....,

No. of safeguards recommended for fire prevention....., Have all previous instructions been obeyed..... (Yes or No.),

If not, give number and reason....., Any instructions given..... (Yes or No.),

CHILDREN:
Register kept,..... All cert. filed,..... No. missing,..... No. employed in prohibitive trades or occupations,.....

WOMEN AND MALE MINORS:
Females 16 to 21 not work, beore 6 a. m..... Not after 9 p. m.,..... Employed not more than 6 days or 54 hours in a week,.....

LAW AND TIME CARD:
Posted,.....

ELECTRIC SYSTEM:
Maximum voltage,..... Standard wiring,..... Switchboard guarded,..... Switches insulated and enclosed,.....

VENTILATION:
Sufficient,..... Excessive heat,.....

HEATING APPARATUS:
Kind,..... Safe,..... Adequate,..... Combustible material near or touching heat conductors,.....

DRAINAGE—PLUMBING:
Proper,..... Sanitary,.....

LIGHTING:
Kind,..... Safe,..... Adequate,.....

WATER CLOSETS:
Kind,..... Repair,..... Clean,..... Lighted,..... Separate for sexes,..... Ratio i. w. c. to males,..... Females,..... Screened,..... Ventilated,..... Obscene writing,..... Separate approaches for women,.....

BALCONIES:
Number,..... Capacity,..... Sufficient exits,..... fire escapes,..... accessible,.....

FLOORS:
Safe,..... Sanitary,..... Spitting not permitted,..... Cuspidors provided,..... Cleaned daily,.....

YARDS, AREAWAYS, UNOCCUPIED SPACES:
Sanitary,..... Rubbish,..... Lead to street or alley,.....

REFUSE:
Receptacles prov. for waste and refuse,..... Sanitary,..... Standard fireproof receptacles prov. for inflam. waste and material,..... Accumulations allowed,..... Removed daily,.....

STAIRWAYS:
No.,..... Location,..... Enclosed,..... Material,..... Adequate,..... Safe,..... Handrails,..... Proper treads,..... Lighted,..... External exits conform to Act 233,..... Circular winding stairs,.....

HALLS AND COURTS:
Unobstructed,..... Clean,..... Safe,..... Lighted,..... Egress to street,.....

AISLES IN AUDITORIUM:
Number,..... Width,..... Direct to exits,..... Unobstructed,..... Sufficient,..... No dead ends,..... No steps,.....

AISLES IN BALCONY:
Number,..... Width,..... Direct to exits,..... Unobstructed,..... Sufficient,..... No dead ends,.....

SEATS:
Maximum number in row,..... Distance from back to back,..... From arm to arm,..... Securely fastened to floor,.....

EXITS:
Adequate width,..... Unobstructed,..... Doors open out,..... Doors, how fastened,..... Windows used,..... Illuminated sign over each exit,..... Unlocked,..... Open outwards,..... No. steps.....

FIRE ESCAPES:
Adequate,..... Tested,..... Safe,..... Need painting,..... Date last painted..... Width in feet,.....

FIRE EQUIPMENT:
Provided,..... Kind,..... Condition,..... Brigade,.....

FIRE HAZARDS EXISTING:
Kind,..... Instructions given for correction,.....

STAGE:
Performances,..... Fire proof curtain,..... Fire proof drops and sky-borders,..... 2 standpipes,..... Hose,..... 4 fire extinguishers,..... 2 42-gal. casks,..... 4 fire buckets,..... painted red,..... Inflammable oil,..... Direct exit from stage,..... Width,..... Unobstructed,..... Lights and electric appliances guarded,.....

DRESSING ROOMS:
Under stage,..... Direct exits from,..... Lights properly guarded,..... Passageways unobstructed,..... Properly lighted,.....

BOOTH:
Size,..... Standard construction,..... Ventilated,..... drop shutters,..... Wiring correct,..... Films enclosed,..... Combustible material,..... No. of machines,..... Metal cabinet and shelves,..... Door kept closed,.....

LOCAL ORDINANCES:
Complied with,.....

UNDERWRITERS' CERTIFICATE.

Name of person accompanying inspector. Position.

Date....., Signed ..... Inspector.

Form I2-3-25-14—8000. Form B.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

BUILDING INSPECTION REPORT.

County_____, District_____, Report No. _____

Name of Building_____, Street and Number_____, Post Office_____,

Name of Proprietor _____, Address _____,

Owner, Agent, Lessee of Building, Name_____, Address, _____

Kind of Building_____, _____

Used for. Stories. Floors occupied.

Employes.	Office Help, Messengers, Etc.	Otherwise Employed.	Total No. Employed.	Max. Daily Hours.	Max. Weekly Hours.	Minors Dismissed.	No.
Male (over 18),							
Male (16-18),						No certificate,	
Male (14-16),							
Female (over 21),						Under 14,	
Female (16-21),							
Female (14-16),						Illiterate,	
Total,						Total,	

Date_____

Owner or Agent.

I hereby certify preceeding statement is correct.

No. of safeguards recommended,_____, No. of instructions given regarding sanitation, _____,

No. of safeguards recommended for fire prevention,_____, Have all previous instructions been obeyed,_____,
Yes or No.

If not, give number and reason, _____, Any instructions given_____
Yes or No.

Floors.	No. of Rooms.	Max. No. Occup.	No. of Means of Esc.	Used as	Sanitation.	Fire Hazards Exist.	Repair.	Refuse.	Overcrowd.	Suff. Vent.	Suff. Lighting.
Basement.											
1											
2											
3											
4											
5											
6											
7											

CHILDREN:
Register kept, ... All cert. filed, ... No. missing, ... No. employed in prohibitive trades or occupations, ...

WOMEN AND MALE MINORS:
Seats for females, ... Use permitted, ... Females 16 to 21 not work. before 6 A. M., ... Not after 9 P. M., ... Employed not more than 6 days or 54 hours in a week, ... Not clean, or oil. mach. in motion, ... Not oper. prohibited polish. buff. wheels, ... Under 18 not oper. elevators, ... Meal recess, ... Period of rest, ...

LAW AND TIME CARD:
Posted in each workroom, ...

STEAM BOILERS:
No. in use, ... Prop. safety valves, ... Water gauges guarded, ... Regular inspect., ... Date last inspect., ... Cert. in office, ... Dnplicate with Dept. of L. & I., ...

ELECTRIC SYSTEM:
Maximum voltage, ... Standard wiring, ... Switchboard guarded, ... Switches insulated and enclosed, ...

VENTILATION:
Sufficient, ... Excessive heat, ... Steam, ... Gases, ... Impurities, ...

HEATING APPARATUS:
Kind, ... Safe, ... Adequate, ... Combustible material near or touching heat conductors, ...

DRAINAGE—PLUMBING:
Proper, ... Sanitary, ...

LIGHTING:
Kind, ... Safe, ... Adequate, ...

WATER CLOSETS:
No., ... Cellar, ... Halls, ... Workroom, ... Separate from workroom, ... Yard, ... Kind, ... Repair, ... Clean, ... Lighted, ... Separate for sexes, ... Ratio 1 w. c. to males, ... Females, ... Screened, ... Ventilated, ... Obscene writing, ... Separate approaches for women, ...

WASH ROOMS AND DRESSING ROOMS:
Prov., ... Suitable, ... Convenient, ... Sink and H. & C. water service, ...

LODGE OR ASSEMBLY HALLS:
Size, ... Maximum number of occupants, ... No. of means of escape, ... Sufficient, ...

FLOORS:
Safe, ... Clean, ... Sanitary, ... Spitting not permit., ... Cuspidors prov., ... Overcrowded, ... Cleaned daily, ...

YARDS, AREAWAYS, UNOCCUPIED SPACES:
Clean, ... Sanitary, ... Rubbish, ...

REFUSE:
Receptacles prov. for waste and refuse, ... Sanitary, ... Standard fireproof receptacles prov. for inflam. waste and material, ... Accumulations allowed, ... Removed daily, ...

ELEVATORS:
No. ..... Passenger, freight, ... Speed, high, medium, ...Hand, power, ...Car apparently safe, ... Entrance, properly guarded, ... Gates, bars, chains, doors, ... Properly fastened, locked, ...

HOISTWAYS AND OPENINGS:
Enclosed, ... Bottoms clean, ... Safe, ...

STAIRWAYS:
No., ... Location, ... Enclosed, ... Material, ... Adequate, ... Safe, ... Handrails, ... Proper treads, ... Lighted, ... External exits conform to Act 233, ...

HALLS:
Unobstructed, ... Clean, ... Safe, ... Lighted, ...

AISLES:
Adequate width, ... Unobstructed, ... Safe, ...

EXITS:
Adequate width, ... Unobstructed, ... Doors open out, ... Doors, how fastened, ... Windows used, ...

FIRE ESCAPES:
Adequate, ... Tested, ... Safe, ... Need painting, ... Date last painted, ... width in feet, ...

FIRE EQUIPMENT:
Provided, ... Sufficient ..... Condition, ... Brigade, ...

FIRE HAZARDS EXISTING:
Kind, ... Instructions given for correction, ...

Name of Person Accompanying Inspector. Position.

Date_____ Signed_____ Inspector.

Form C.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

BAKERY INSPECTION REPORT.

County_____, District_____, Report No. _____

Firm Name_____, Street and Number_____, Post Office_____,

President _____, Gen. Mgr. or Supt. _____

No. of buildings. No. of stories. Construction of buildings.

Floors occupied. Goods manufactured.

Employes.	Office Help, Messengers, Etc.	Otherwise Employed.	Total No. Employed.	Max. Daily Hours.	Max. Weekly Hours.	Minors Dismissed.	Number.
Male (over 18),							
Male (16-18),						No certificate,	
Male (14-16),							
Female (over 21),						Under 14,	
Female (16-21),							
Female (14-16),						Illiterate,	
Total,							
						Total,	

I hereby certify above statement is correct. Date_____

Manager or Superintendent.

No. of safeguards recommended_____, No. of instructions given regarding sanitation_____,

No. of safeguards recommended for fire protection_____, Have all previous instructions been obeyed_____, Yes or No.

If not, give number and reason_____, Instructions given, _____, Yes or No.

CHILDREN:
Register kept,..... All cert. filed,..... No. missing,..... No. employed in prohibitive trades or occupations,.....

WOMEN AND MALE MINORS:
Seats for females,..... Use permitted,..... Females 16 to 21 not work. before 6 a. m.,..... Not after 9 p. m.,..... Employed not more than 6 days or 54 hours in any one week,..... Not clean, or oil. mach. in motion,..... Under 18 not oper. elevators,..... Meal recess,..... Period of rest,.....

LAW AND TIME CARD:
Posted in each workroom,.....

WAGES:
Check, cash, order,..... How often paid,..... Days beld back,.....

ELEVATORS:
No.,..... Passenger, freight,..... Speed, high, medium,..... Hand power,..... Car apparently safe,..... Entrance prop. guarded,..... Gates, bars, chains, doors,..... Prop. fasten, locked,.....

HOISTWAYS AND OPENINGS:
Enc.,..... Bottoms clean,..... Safe,.....

MACHINERY:
Vats, gears, belts, shafting, set screws, machinery,..... guarded,..... not spec. dangerous,..... Belt shifters,..... Loose pulleys,.....

DUST CREATING MACHINERY:
Exhaust systems provided,... .... Sufficient,..... Continuously operated,.....

STAIRWAYS:
No.,..... Location,..... Enclosed,..... Material,..... Adequate,..... Safe,..... Handrails,..... Proper treads,..... Lighted,..... External exits conform to Act 233,.....

HALLS:
Unobstructed,..... Clean,..... Safe,..... Lighted,.....

AISLES:
Adequate width,..... Unobstructed,..... Safe,.....

EXITS:
Adequate width,..... Unobstructed,..... Doors open out,..... Doors how fastened,..... Windows used,.....

DRAINAGE—PLUMBING:
Proper,..... Sanitary,..... Drain or sewer pipe separate from bake storage or sales room,.....

LIGHTING:
Kind,..... Safe,..... Adequate,.....

FLOORS:
Cement, tile, brick or wood,..... Free from cracks,..... Holes,..... Safe,..... Clean,..... Spitting not permit.,..... Overcrowded,..... Cleaned daily,.....

YARDS, AREAWAYS, UNOCCUPIED SPACES:
Clean,..... Sanitary,..... Rubbish,.....

WATER CLOSETS:
No.,..... Location,..... Separate from workroom,..... Yard..... Kind,..... Repair,..... Clean,..... Lighted,..... Separate for sexes,..... Ratio l. w. c. to males,..... Females,..... Screened,..... Ventil.,..... Obscene writing,..... Separate approaches for women,.....

WASH ROOMS AND DRESSING ROOMS:
Provided,..... Suitable,..... Convenient,..... Sink and H. & C. water service,.....

BAKE ROOM, MIXING ROOM, STOREROOM AND SALESROOM:
Clean,..... Prop. arranged for clean,..... Free from vermin,..... Tobacco used,..... Sleeping permitted,..... Animals allowed to remain,.....

WALLS, CEILING AND WOODWORK:
Good repair,..... Painted how often,..... Painting necessary,.....

FURNITURE, TROUGHS, SHELVES, UTENSILS:
Clean,..... Prop. arranged for cleaning,.....

DRINKING WATER:
Prov.,..... Clean and pure,..... Covered receptacle,..... Cleaned,..... Sanitary fountain,..... No. collections,.....

HARMFUL SUBSTANCES:
Poisons,..... Fumes,..... Dusts,..... Gases,..... Present in workroom,..... Hot water and individ. towels prov.,..... Food taken in or eaten in workroom,..... Notice posted,..... Employes present in such room at meal time,..... Necessary,..... Suitable lunch place provided,.....

VENTILATION:
Sufficient,..... Excessive heat,..... Steam,..... Gases, Impurities,..... Windows,..... Hoods and pipes over oven door,..... Asb pit,..... Other mechanical means nec.,..... Excessive beat,..... Steam,..... Gases,..... Dust,..... Impurities,.....

FIRE ESCAPES:
Adequate,..... Tested,..... Safe,..... Need painting,..... Date last painted,..... Width in feet,.....

STEAM BOILERS:
No. in use,..... Prop. safety valves,..... Water gauges guarded,..... Regular inspec.,..... Date last inspec.,..... Cert. in office,..... Duplic. with Dept. of L. & I.,.....

FIRE DRILL:
Held,..... Organized,..... Month. drill,..... Inspected drill,..... Properly conducted,..... Fire drill alarm,..... Kind,..... Condition of alarm,.....

SAFETY:
Organization with engineer in charge,..... Without engineer in charge,..... First aid provided,.....

HEATING APPARATUS:
Kind,..... Safe,..... Adequate,..... Combustible material near or touching heat conductors,.....

REFUSE:
Receptacle prov. for waste and refuse,..... Sanitary,..... Standard fireproof receptacles prov. for inflam. waste and material,..... Accumulations allowed,..... Removed daily,.....

FIRE EQUIPMENT:
Provided,..... Kind,..... Condition,..... Brigade,.....

FIRE HAZARDS EXISTING:
Kind,..... Instructions given for correction,.....

PERMIT:
Posted,....., Date,.....

Name of person accompanying inspector.

Date....., Position.

Signed _____
Inspector.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

VISIT REPORT.

County_____, District_____, Complaint No. _____

Name _____

Address _____

Business _____

Nature of Visit_____

Date_____.

_____
Inspector.

Form 19-3-25-14—12,000.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

COMPLAINT REPORT.

County_____, District_____, Report No. _____

Name _____

Street_____, No. _____, Post Office_____,

Subject _____

_____

Referred to Inspector_____, Date_____,

Investigated _____
Date. Complaint No. Violation found—Not found.

Detailed Report_____

_____

_____
Inspector.

Note.—If necessary use other side of card.

Form 18-3-25-14—4000.

Form F.

PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY—Bureau of Inspection.

ACCIDENT INVESTIGATION REPORT.

County_____, District_____, Report No. _____

Name of Injured_____, Sex_____, Address _____,

Nationality _____, Date of Accident_____, Fatal or Serious_____,

Establishment_____, Address _____,

Nature of Business_____, Kind of Accident_____,

Referred to Inspector_____, Date_____,

INSPECTOR'S REPORT

Extent of Injuries_____

Detailed Cause of Accident_____

Were all laws pertaining to employment of injured person complied with? _____ If not, state violations_____
Yes or No.

Was accident caused by defective equipment?_____, Lack of safeguards?_____, Careless methods?_____,

Source of Information_____
Official. Witness. Injured. (Check source.)

Is Accident Register kept?_____

In your judgment, how could such an accident have been prevented?_____

_____

_____

No. of safeguards recommended_____, No. of instructions given regarding sanitation_____,

No. of safeguards recommended for fire prevention_____

REMARKS:

Date_____,

_____
Inspector.

AMONG THE PUBLICATIONS ISSUED BY THE BOARD OF INDUSTRIAL HYGIENE DURING THE YEAR 1914 ARE THE FOLLOWING, WHICH ARE OF GENERAL INTEREST.

SUGGESTIONS FOR FORMING FIRE DRILL ORGANIZATIONS IN FACTORIES.

"The law requires that 'in all factories and industrial establishments, where women or girls are employed, that fire escapes, appliances for the extinguishment of fires, or proper and sufficient exits in case of fires or panic, either or all, are required to be maintained, fire drills shall be periodically conducted, not less than once a month, by the person or persons in charge, under rules and regulations promulgated' in other than cities of the first and second classes, under the direction of the Department of Labor and Industry. In these drills the persons employed in such establishments shall be instructed in and made thoroughly familiar with the use of such fire escapes, appliances and exits. The drills shall include the actual use of the fire escapes and exits from the building to a place of safety on the ground outside. 'Any person who violates or fails to comply with the provisions of this law shall be guilty of a misdemeanor, and on conviction shall be sentenced to pay a fine of not less than twenty-five dollars ($25.00) nor more than five hundred dollars ($500.00) and to undergo imprisonment in the county jail for not less than ten days nor more than sixty days, either or both.'

"For the purpose of aiding establishments in carrying out the provisions of the law, these instructions have been prepared. They are general in character and will of necessity have to be amended to suit the individual need of each establishment.

"The management of each establishment shall first appoint a Factory Fire Chief. He shall be a man whose position commands the respect of all employees and one who will feel his responsibility for the organization, discipline and proper management of all drills that may be necessary to empty the building of its occupants in a quick, orderly and safe manner.

Duties of the Fire Chief.

"As a preliminary measure, the Fire Chief shall select an Assistant Chief and also captains and squad leaders for each floor, from those who are normally in authority and call them together into a conference and outline in full the organization and the movements. The

movement from each floor by each squad should be carefully laid out and the Captains and Squad Leaders made thoroughly conversant with their duties.

"His regular duties should be as follows:

"Make a daily inspection of the establishment to see that the aisles, approaches to stairs, fire escapes, fire alarm boxes and fire fighting equipment are unobstructed and in good condition; that the fire doors are in working order and exit doors unlocked.

"See that gas lights are properly protected, and that floor sweepings, oily waste and rags, greasy lunch papers, and like material, subject to spontaneous ignition, are kept in suitable standard safety cans, and that the contents of these cans are removed nightly and disposed of in the furnace or a suitable incinerator.

"Prohibit the accumulation of rubbish within or about the establishment, particularly around heating apparatus, radiators or any heat conductors, under stairways, in cellars and in unfrequented places.

"See that all combustible and inflammable liquids are properly cared for and handled in a safe manner.

"The Factory Fire Chief shall also keep a record of the monthly fire drill, stating therein the date the drill was held, the number of employees participating therein, and the time taken to empty the building. This record shall be subject to inspection at any time by the Factory Inspector.

"He shall also make daily tests of such fire alarm or fire fighting equipment as is necessary to insure good working conditions, making a record of the same in a book provided for above purpose.

Assistant Fire Chief.

"The Assistant Fire Chief shall perform all duties delegated to him by the Fire Chief and shall assume that official's duties during his absence.

Floor Captains.

"The employees on each floor shall be in full charge of a Floor Captain, who will be governed by instructions received from the Fire Chief or the Assistant Chief.

"Under the direction of the Fire Chief, the Floor Captains shall appoint a leader for each aisle or squad division and a sufficient number of employees to be stationed at exit openings and stairways, to insure an unobstructed exit, to preserve order, to keep the line in motion or to retard the same, as may be necessary, to close windows and doors and to search for any who may have been left behind.

"Where columns pass through openings between fire walls, passageways or stairways having sliding doors, a member of the squad shall be assigned to operate these doors and to see that they are not closed until all have vacated.

"Other members shall be assigned to inspect the toilets and dressing rooms at the alarm of fire to prevent anyone entering these rooms and to see that they are emptied of occupants.

"The Floor Captain shall designate the stairways, fire escapes or other means of egress by which the Squad Leaders shall lead their respective columns to safety at his command to march.

Aisle or Squad Leaders.

"The Senior Aisle Leader shall assume command in the absence of a Floor Captain.

"The Squad Leaders are in command and shall lead their respective divisions. They shall obey all orders issued by the Floor Captains, Fire Chief or Assistant Chief, and shall be held responsible for the safety of those in their direct charge.

Elevators.

"Elevators should not be used as a means of egress by employees in case of fire drills or alarm, owing to the liability of great danger due to crowding around the elevator gates.

Fire Escapes.

"Fire escapes shall be kept in repair, be painted at least once a year and shall be unobstructed and kept clear and free from ice and snow.

"Where fire escapes are to be used by employees at night as means of egress, they shall be properly lighted.

"All entrances to fire escapes shall be plainly marked by colored light and the words 'Fire Exit.'

General Methods and Remarks.

"The monthly fire drill signal shall be sounded at times previously unknown to the employees, except in department stores and other places where the public assembles in large numbers in which cases the signal shall be sounded after the public has been excluded.

"When establishments are operated at night, fire drills shall be held for the employees working at that time in the same manner as for those who work in the day time.

"The means of egress used by the different squads should from time to time be varied, so that the employees are familiar with all means provided for leaving the building.

"When the alarm of fire is given, the engineer of the establishment shall be instructed to shut down at once all machinery and to cut off the supply of gas to the building by means of an outside valve after all have vacated the building.

"It is of the utmost importance that all windows opening upon, above or below the fire escapes, be promptly closed in order that smoke or flame may not prevent the use of the escapes."

FIRE DRILL INSTRUCTIONS.

Fire Drill Aim.

"Fire drills are intended for the protection and safety of every employee, and in order to make them effective every person taking part must realize his own responsibility and assist in conducting them in an orderly and earnest manner.

Organization.

"The Factory Fire Chief is in absolute command and must be obeyed when the fire alarm signal is sounded.

"He shall appoint a captain for each floor, whose duties are to form the employees of their respective floors into aisle columns or squads under the direction of an aisle or squad leader. A sufficient number of employees on each floor shall be appointed by the floor captain to be stationed as guards at exit openings and stairways in order to insure an unobstructed exit, to preserve order, to keep the line in motion or to retard the same as may be necessary. Others shall be detailed to search for any who may have been left behind and to close windows and doors.

"It shall be an important duty of the Factory Fire Chief to see that at all times all external fire escapes are not made impassable by snow, ice, etc., and are in good working order.

In the Event of Fire.

"Immediately give the alarm by the method adopted.

"Telephone fire headquarters without delay and send in alarm from auxiliary box, or nearest city fire alarm box.

When Fire Alarm Signal Sounds.

"Employees shall at once:
"Stop work.
"Shut off power.
"Stop machines.
"Shut off gas and other open flames.
"Close all doors and windows.
"Put chairs, stools and other obstructions on top of or under benches to clear the passageway.
"Form line promptly with front of column facing the usual egress aisle and obey word of command from Floor Captain.

At Command to March.

"March rapidly in the usual formation from the building by means of the designated exits. Follow the aisle leader and do not push or crowd.
"Retain formation until dismissed, or the line is returned to original starting point.

For Your Safety.

"Don't treat the fire drill as a joke—it may mean your life or death.
"Don't scream, laugh, talk or make unnecessary noise. Discipline must be maintained. Obey all regulations and commands.
"Act promptly—your delay may endanger the safety of not only yourself but other persons.
"Don't wait to get your hat and coat; your life is of more value.
"Don't remain in toilet or dressing rooms.
"Don't try to use elevators.
"You must assist in carrying out instructions."

SUGGESTIONS FOR ORGANIZING FIRE BRIGADES IN FACTORIES.

Fire Brigade Organization.

"The Factory Fire Chief shall organize a Fire Brigade. The Brigade shall consist of a sufficient number of employees, who shall be formed into a Company, or as many Companies as the size of the establishment may warrant.

"The Fire Chief shall appoint a Captain and Lieutenant for each Company, whose duties shall be to command the forces under their charge, as directed.

"He shall appoint the proper kind and number of men to man the fire fighting equipment. These members shall be thoroughly drilled in the handling, use and care of all fire fighting equipment entrusted to their charge.

"He shall district the establishment and shall assign such members and such apparatus to each district as he deems sufficient to give adequate protection.

"He shall hold frequent fire drills in different parts of the establishment and instruct the different members of the Brigade exactly what to do in case a fire occurs in any different part.

"The Fire Chief shall also see that the members of the Brigade familiarize themselves with every portion of the establishment so that in the event of fire or smoke they can act with dispatch and judgment.

"In the absence of the Fire Chief or of the Assistant Fire Chief, the Senior Captain shall assume command and in the absence of the Captain of a Company, the Lieutenant shall be in charge.

General Methods and Remarks.

"The members of the Brigade shall each be given a specific duty and at an alarm of fire they should quickly assemble, without interference to the egress of operatives from building, at designated places in the establishment, where the fire equipment assigned to them is stationed.

"Those assigned to portable fire-fighting equipment, such as fire extinguishers, water pails, etc., should congregate at the fire danger point and act as directed by the Fire Chief or his subordinate officials.

"Those assigned to standpipe hose stations should stretch the fire hose and immediately arrange to concentrate the entire capacity of the water supply under their direction on the fire danger point.

"Suitable badges should be given to members of the Fire Brigade which will give them a certain amount of distinction when detailed for this work."

SAFETY ORGANIZATIONS IN INDUSTRIAL ESTABLISHMENTS.

"Accidents are in large measure the result of lack of knowledge or attention on the part of those connected with the establishment. Therefore, the safety organization should not only be given the duty of

discovering dangerous places and safeguarding them, but should also have charge of study and educational conferences promoted for the purpose of calling attention to hazards which should be avoided, formulating rules for safety, etc.

"It is, of course, recognized that a suitable organization for any particular plant must be dependent in a large measure upon the character and size of the establishment. Therefore detailed rules which will fit all conditions are difficult to make.

"One rule, however, which is well worth following, is that the head of the safety organization should be one of the principal officials of the establishment, and that he should have a large representation of the hand workers on the shop committees. This follows from the fact that the work is and should be regarded as of the utmost importance to the success of the plant. The Commissioner of Labor and Industry recently wrote manufacturing establishments in the State asking them to appoint a representative to act as a connecting link between the Department and the establishment. He suggested that this representative might to the best advantage be the head of the safety organization. This suggestion is now emphasized, with the addition that it would be well to have the head of the safety organization serve also as the chief of the plant fire department and fire drill division. Those interested in the organization of safety departments in industrial concerns will find the following general statements put forth by the National Council for Industrial Safety in one of its bulletins to be of excellent value. This outline was prepared as the result of conferences of many of the best safety men of the country:

The Work of a Safety Organization.

'The form and character of any organization must naturally vary as the work to be performed varies; hence the work to be done by a Safety Organization should first be considered before determining what the form of organization should be.

'Safeguarding and Education comprise the task of any safety organization, all of which naturally requires efficient planning, direction and supervision.

'In SAFEGUARDING there are involved among others the following essential elements:

1. A study of hazards incidental to the use of equipment and machinery;
2. Adoption of Standards;
3. Inspection for—
   (a) Need of safeguards;
   (b) Installation of safeguards;
   (c) Maintenance of safeguards;
   (d) Use of safeguards;

4. In new construction or replacement, checking in drafting room or purchasing department.

'In EDUCATIONAL work there are involved among others the following essential elements:

1. A study of hazards incidental to operations;
2. Adoption of operating rules covering safe method of doing work;
3. Instruction of new men as to hazards and rules;
4. Interesting the men;
5. Providing bulletin boards, in the several departments, for the posting of safety orders, rules and information.

'Form of Safety Organization.

'The existing working force of every industrial establishment or transportation concern, whether large or small, is adaptable very readily to an Accident Prevention organization. No new employees are required unless it be in the case of very large concerns in which it might be necessary to select some person to devote himself exclusively to the inspection work.

'In any form of organization created, the following elements are essential:

1. A Safety Inspector (who in a small plant may perform other duties). He should,
   (a) Inspect—
      (1) For need of safeguards;
      (2) For installation of safeguards;
      (3) For maintenance of safeguards;
      (4) For use of safeguards;
      (5) For unsafe practices;
      (6) For plant cleanliness;
   (b) Have charge of details of all safety work;
   (c) Receive all reports, recommendations and suggestions;
   (d) Keep all necessary records;
2. A Central Safety Committee composed of plant superintendent or his assistant (chairman), safety inspector (secretary) and three or more high grade department superintendents, foremen or workmen, which should,
   (a) Have general charge and supervision over safety work;
   (b) Pass on all controverted matters;
   (c) Gather all available information;
   (d) Establish standards for safeguards;
   (e) Outline education campaign;
   (f) Promulgate rules for safe operation.

3. Workmen's Committees; consisting of three to five workmen appointed and changed periodically. They should,
   (a) Make inspections;
   (b) Investigate accidents in their several departments;
   (c) Render written reports on forms provided for that purpose.
4. Foremen; each foreman should,
   (a) Enforce safety rules adopted;
   (b) Be held responsible for the safety of his men;
   (c) Investigate accidents, reporting causes, and suggestions for method of preventing recurrence, on forms provided for that purpose;
   (d) Make frequent inspections of his department;
   (e) Render weekly reports on forms provided for that purpose.
5. Meetings of foreman—held monthly to discuss safety matters.
6. Workmen; each workman should be educated and interested in safety matters. This work involves,
   (a) Instruction of new men;
   (b) Familiarizing of men with rules;
   (c) Interesting the men through bulletin boards, prizes, etc.
   (d) Discipline.' "

GOOD HOUSEKEEPING.

Suggestions for Fire Prevention and Sanitation.

The question often arises, what is Good Housekeeping in relation to a manufacturing or industrial plant? With an idea of giving some suggestions along that line, the following items are presented. They comprise the main points to be considered. To make them valuable, rules embodying these features should be formulated and then after posting them throughout the plants they should be strictly enforced.

Provide metal receptacles with self-closing lids for all oily and greasy rags or papers and empty them daily.

Allow no accumulation of rubbish in closets, under stairways or in unfrequented places.

Permit no depressions or recesses in floors or walls wherein rubbish may be swept or thrown.

Keep all combustible materials away from all steam or other heat conductors, stoves, furnaces, boilers, etc.

Gasoline, turpentine, paints, oils, varnishes and all explosive and inflammable materials should be kept in a separate fire-proof building suitable for this purpose.

Frequent inspections of all lighting fixtures should be made to insure that they are in a safe condition. If open gas lights are present the brackets should be of the rigid type and suitable wire guards should be installed to prevent combustible material being blown or pushed in contact with the flame.

Electric wiring especially needs attention to see if insulation is intact, connections tight, proper fuses installed and that danger of short circuiting is eliminated.

The use of all artificial lights such as from matches, open torch, candles should be at all times prohibited. Where it is necessary that a temporary light be used, it should be an electric flash or extension light or a standard type lantern kept in good condition.

Matches, if necessary, should be of a safety type.

Smoking should be prohibited within all buildings.

Clothing of employees should be confined in metal lockers and should not be hung on the walls or thrown promiscuously about the workroom.

Floors, walls, ceilings, hallways and stairways should be kept clean, and free from dust.

Toilets, receptacles for drinking water and all sanitary appliances should receive a daily inspection in order to ensure a sanitary condition.

All garbage cans or barrels should be kept tightly covered and emptied daily.

In brief, good housekeeping embodies the removal of conditions which might tend to make a plant unsafe from the standpoint of fire or health.

PHYSICAL EXAMINATION OF CHILDREN APPLYING FOR EMPLOYMENT CERTIFICATES.

The following report in regard to the examination of children who apply for employment certificates will be of considerable interest to the public.

Harrisburg, Pa., October 20, 1914.

Commissioner John Price Jackson,
Department of Labor and Industry,
Harrisburg, Pa.

My dear Commissioner:—I wish to report to you the result of the medical examination of children between the ages of fourteen and sixteen years, applying for employment certificates in Philadelphia during June, July and August, 1914. This examination was undertaken at the request of the Child Labor Association, which furnished the funds which were necessary for the carrying on of this work. Dr. Cornell, of the Bureau of Health of Philadelphia, who also has charge of the Division for the Medical Examination of School Children, detailed men to assist in this examination. At your request, I detailed Dr. W. H. Blakeslee who had general supervision of this work, besides doing a large amount of it himself. He was occupied in this examination from June 17th to August 31st, 1914.

The result of this examination shows the necessity of continuing this work so as to protect the children from being placed at work when they are physically unable to stand the confinement, long hours and often unhealthy conditions surrounding industrial occupation.

It also, I think, demonstrates the need of classification of employments to which children should be eligible. The first grade is composed of children who are strong and well developed physically and who may be allowed to be employed in any industry permissible by law. Then there is a grade of children who are below par, who should only be allowed to be employed in such industries as would insure plenty of outdoor life and not too long hours. Then there is still another class who should not be permitted to engage in labor at all until after they are sixteen years of age. This classification, in my opinion, should be made by a committee made up of various health officers and physicians who have been examining children in schools.

It might be adopted by the Industrial Board as, under the law, it is required that all children should be physically qualified, as well as mentally qualified before a certificate shall be issued and I believe that the Industrial Board would have ample authority to require such standards. I also believe the board has ample authority to require that applicants for employment certificates should be required to show their physical fitness before these certificates are issued and I believe further that as the school authorities already have a very

efficient system for the examining of children, it would be advisable to arrange, if possible, with them to see that these examinations are made.

A summary of the total number of children examined in Philadelphia in the above named examination was 3,964. Of these 724 were found without defect; 3,224 with one or more defects. There were 336 certificates temporarily refused because of the need of proper glasses and 75 refused because of bad teeth. These certificates were afterwards granted when the defects were corrected. There were 16 certificates refused absolutely, because of the following defects: heart disease, 2; poor nutrition and anaemia, 1; refused to wear glasses, 1; pthisis, 3; pthisis with mitral regurgitation, 4; suspicious tuberculosis of the lungs, 1; tuberculosis of hip with mitral regurgitation, 2; rheumatism with mitral regurgitation, 1; and nephritis, 1.

Respectfully submitted,

(Signed) JOHN C. PRICE,
Chief Medical Inspector.

The following table shows in tabular form the result of the medical examination of 3,964 children between the ages of fourteen and sixteen years, applying for employment certificates in the City of Philadelphia from June 17th to August 31st, 1914, inclusive:

SUMMARY.

	Males 14 years.	Males 15 years.	Total males.	Females 14 years.	Females 15 years.	Total females.	Total males and females.
RACE:							
White,	1,467	345	1,812	1,109	259	1,368	3,180
Colored,	26	7	33	6	5	11	44
POSTURE:							
Erect,	1,116	285	1,401	953	236	1,189	2,590
Stooped,	377	66	443	161	28	189	632
DEFORMITIES:							
None,	1,429	349	1,778	1,089	264	1,353	3,131
Spine, Scoliosis,	17	1	18	18	.....	18	36
Abnormal,	1	1	2	.....	.....	.....	2
Limbs, Abnormal,	2	1	3	6	.....	6	9
Flat Foot,	2	.....	2	.....	.....	.....	2
Artificial,	2	.....	2	1	.....	1	3
Shortened Leg,	1	.....	1	.....	.....	.....	1
Ankylosis of Knee,	1	.....	1	.....	.....	.....	1
Wry Neck,	1	.....	1	.....	.....	.....	1
CHEST:							
Normal,	1,237	323	1,560	1,005	256	1,261	2,821
Flat,	251	29	280	107	8	115	393
Funnel Breast,	.....	.....	.....	1	.....	1	1
Pigeon Breast,	2	.....	2	.....	.....	.....	2
Chicken Breast,	3	.....	3	.....	.....	.....	3
Asymmetrical,	.....	.....	.....	1	.....	1	1
HEART:							
Normal,	1,453	345	1,798	1,095	257	1,252	3,050
Abnormal,	2	6	8	.....	.....	.....	8
Mitral Regurgitation,	35	2	37	16	7	23	60
Aortic Sclerosis,	1	.....	1	1	.....	1	1
Tachycardia,	.....	.....	.....	1	.....	1	1
Mitral Stenosis,	.....	.....	.....	1	.....	1	1
Haemic Murmur,	2	.....	2	1	.....	1	3

SUMMARY—Continued.

	Males 14 years.	Males 15 years.	Total males.	Females 14 years.	Females 15 years.	Total females.	Total males and females.
LUNGS:							
Normal,	1,463	350	1,813	1,101	263	1,364	3,177
Tuberculosis,	3	.....	3	1	.....	1	4
Susp. Tuberculosis,	19	2	21	10	1	11	32
Bronchitis,	6	.....	6	2	.....	2	8
Abnormal,	1	.....	1	.....	.....	.....	1
Bronchitis and Susp. Tuberculosis,	1	.....	1	.....	.....	.....	1
NERVOUS SYSTEM:							
Stable,	1,484	348	1,832	1,105	263	1,368	3,200
Unstable,	9	3	12	9	1	10	32
Tremors,	.....	1	1	.....	.....	.....	1
NUTRITION AS MODIFIED BY:							
Anaemia, Noue,	1,289	291	1,580	966	237	1,235	2,813
Anaemia, Moderate,	193	38	231	138	27	165	396
Anaemia, Marked,	11	3	14	10	.....	10	24
Ht. & Wt., Good,	1,281	307	1,588	994	244	1,238	2,826
Ht. & Wt., Fair,	176	44	220	109	18	127	347
Ht. & Wt., Poor,	15	2	17	11	2	13	30
Post. & Defor., Good,	1,339	330	1,659	1,055	251	1,306	2,965
Post. & Defor., Fair,	100	22	122	53	12	65	187
Post. & Defor., Poor,	11	1	12	6	1	7	19
VISION:							
Right Eye, Good,	1,171	281	1,452	831	216	1,047	2,499
Right Eye, Fair,	211	53	264	220	31	251	515
Right Eye, Poor,	71	19	90	62	17	89	179
Left Eye, Good,	1,186	279	1,465	831	217	1,048	2,513
Left Eye, Fair,	203	57	260	225	33	258	518
Left Eye, Poor,	67	17	84	60	14	74	158
EYES:							
Glasses worn,	148	37	185	152	29	181	366
Held for glasses,	142	44	186	132	44	176	362
Blepharitis,	8	1	9	7	.....	7	16
Conjunctivitis,	1	.....	1	1	.....	1	2
Squint,	9	.....	9	7	1	8	17
Glass eye,	1	.....	1	.....	.....	.....	1
Ptosis,	1	.....	1	.....	.....	.....	1
Corneal Opacity,	1	.....	1	2	.....	2	3
Cataract,	.....	1	1	.....	1	1	2
Nystagmus,	.....	1	1	.....	.....	.....	1
NOSE AND THROAT:							
Tonsils, Normal,	1,233	298	1,531	904	221	1,125	2,656
Tonsils, Fair,	220	50	270	192	39	231	501
Tonsils, Poor,	41	5	46	19	4	23	69
Obstruction, Normal,	1,350	318	1,668	1,053	248	1,301	2,969
Obstruction, Moderate,	102	33	135	52	13	65	200
Obstruction, Marked,	23	2	25	8	2	10	35
Catarrh, Normal,	1,092	299	1,391	814	226	1,040	2,431
Catarrh, Moderate,	365	51	416	291	33	324	740
Catarrh, Marked,	17	3	20	8	5	13	33
TEETH:							
Normal,	853	216	1,069	616	168	784	1,853
1 to 3 decayed,	593	124	717	454	91	545	1,262
4 or more decayed,	48	10	58	43	4	47	105
HEARING:							
Right, Good,	1,475	347	1,822	1,106	263	1,369	3,191
Right, Fair,	16	4	20	8	.....	8	28
Right, Poor,	3	2	5	.....	1	1	6
Left, Good,	1,474	346	1,820	1,107	264	1,371	3,241
Left, Fair,	17	5	22	7	.....	7	29
Left, Poor,	2	2	4	.....	.....	.....	4
TUBERCULOSIS:							
None,	1,467	349	1,816	1,103	263	1,366	3,182
Active Lung,	4	.....	4	.....	.....	.....	4
Susp. Lung,	21	3	24	10	1	11	35
SKIN:							
Acne,	3	3	6	8	.....	8	14
Pediculosis,	2	1	3	12	.....	12	15
Eczema,	2	.....	2	1	.....	1	3
Impetigo,	.....	.....	.....	1	.....	1	1
Furunculosis,	1	1	2	.....	.....	.....	2
MISCELLANEOUS:							
Goitre,	1	.....	1	8	.....	8	9
Defective Speech,	3	.....	3	4	.....	4	7
Frac. Patella,	1	.....	1	.....	.....	.....	1
Mentally Defic.,	.....	.....	.....	2	.....	2	2

SAFETY MEETINGS AND EXHIBITS.

In order to promote the idea of safety throughout this Commonwealth, the Department has endeavored to bring this matter to the attention of the public by holding safety meetings and safety exhibits in various parts of the State. The safety meetings were held for the purpose of interesting both employers and employees in the great safety movement which is spreading throughout the country. The need of education along this line is very apparent when it is considered that approximately two persons are being killed and one hundred and twenty-five being injured every working day in this State. It is gratifying to note that the attendance at these meetings was very large.

The cities and county fairs which were reached in this way are as follows: Scranton, Lebanon, Reading, York, Philadelphia, Pittsburgh, Johnstown, Lebanon County Fair, Conneaut Lake Fair, Reading Fair, Nazareth Fair, Allentown Fair and York Fair.

Some of the various safety devices which have been given to the Department by various firms are given below. This list is not complete and will be added to in subsequent issues.

Samples of Wire Glass—The Western Glass Company, Streator, Illinois.

Electrene Fire Extinguisher—The Electrene Company, New York City.

Keystone Safety Shackle Hook, 3 Keystone Connecting Links—Keystone Drop Forge Works, Chester, Pa.

Humason Saw Guard—The Humason Brothers, Youngstown, Ohio.

Danger and Warning Signs—Enameled Steel Sign Co., Chicago, Illinois.

Set Screw Protectors—The H. C. Canfield Co., Bridgeport, Conn.

Pyrene Fire Extinguishers—Pyrene Manufacturing Co., Philadelphia, Pa.

Columbia Panic Bolt—Russell & Erwin Mfg. Co., New Britain, Conn.

"No Smoking" cards—New York State Fire Marshall, Albany, New York.

One Safety Frog Guard, One Safety Belt, Two Pairs of Tongs, Two Drills—The New Jersey Zinc Co., Palmerton, Pa.

Bristo Patented Safety Set Screws—The Bristol Company, Waterbury, Conn.

Electric Safety Lamp—Hirsch Electric Miners' Lamp Co., Philadelphia, Pa.

Sample Board of Safety Lathe Dogs—J. H. Williams & Co., Brooklyn, New York.

Set of Grinnell Sprinklers—General Fire Extinguisher Co., Providence, R. I.

Set of Northern Self-closing Water Gauges, Wire Screen Glass Protector, One Great Northern Gauge Cock—Northern Tool Company, Utica, New York.

Models of Fly Ball Governor and Guard, Expanding Mandril Driver, Roll Shaft Driver and Shaft, Safety Crow Bar, Guards for Locking Boiler Valves, Switch-board and Switch Locking Device, Danger Sign "Workmen Above," "Safety First" sign, Combination bulletin board and employees suggestion box, 12 "Safety Slogans"—Atlas Portland Cement Co., Northampton, Pa.

Mounted collection of different types of Eye Goggles—T. A. Willson & Co., Reading, Pa.

Ladles—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Hand Fire Extinguisher, Oily Waste Can, Non-explosive Safety Can—American-LaFrance Fire Engine Co., Elmira, N. Y.

Samples of Wire Glass—Pennsylvania Wire Glass Co., Philadelphia, Pa.

Anti-Accident Protected Lathe Dog—The West Steel Casting Co., Cleveland, Ohio.

National Safety Lathe Dog—Oneida National Chuck Co., Oneida, New York.

Set of Photographs Showing Safety Devices, Head Helmet for Babbitt Pourers, Collection of Broken Eye Goggles, Safety Emery Wheel Dresser, Collection of Danger Signs, Protected Lathe Dog, Model of Saw Guard, Model of Safety Railway Switch—The Lorain Steel Company, Johnstown, Pa.

First Aid Cabinet Complete, Collection of Safety Signs, Broken Goggles—The Cambria Steel Company, Johnstown, Pa.

One set Never-Slip Safety Clamps—The Never Slip Safety Clamp Co., New York City.

One Set of Photographs—Bethlehem Steel Company, South Bethlehem, Pa.

APPOINTMENT OF SPECIAL REPRESENTATIVES OF INDUSTRIAL ESTABLISHMENTS IN ORDER TO CO-OPERATE WITH THE DEPARTMENT OF LABOR AND INDUSTRY.

Early in the organization of the Department, it was considered advisable, in order to obtain the co-operation of the officials of establishments throughout the Commonwealth, to have some representative designated in each establishment, with whom the Department or its

inspectors might confer on all matters pertaining to its administration. The Commissioner accordingly prepared a letter which was sent to the many establishments of this State, embodying these ideas and in response to his request the following establishments reported. Subsequent inspections made in many of these plants have shown the wisdom of this policy.

LIST OF SAFETY REPRESENTATIVES.

FIRM.	REPRESENTATIVE.
American Dredging Company, 3rd & Chestnut Sts., Philadelphia,	James N. Knipe.
John Bromley & Sons, Lehigh Ave., bel. Front, Philadelphia,	John Knowles.
Mackintosh, Hemphill & Co., 12th & Etna Sts., Pittsburgh,	H. A. Lomax.
The J. C. Brill Company, 62nd & Woodland Ave., Philadelphia,	J. W. Rawle.
Keystone Telephone Co. of Philadelphia, 135 S. 2nd St., Philadelphia,	C. F. Slater.
The Baldwin Locomotive Works, Philadelphia,	William Rhodes.
Laird, Schober & Co., 19th & Buttonwood Sts., Philadelphia,	George S. Laird.
Superior Steel Company, Carnegie,	E. H. Drebert.
McClintic-Marshall Construction Co., Pittsburgh,	C. L. Collins.
Universal Portland Cement Co., Universal,	E. D. Barry.
Spang, Chalfant & Co., Inc., Etna,	Edward Evans.
William Sellers & Company, 1600 Hamilton St., Philadelphia,	W. L. Haynes.
Sauquoit Silk Mfg. Co., 4015 Clarissa St., Philadelphia,	H. W. Inskeep.
Verona Steel Casting Co., Verona,	W. E. Moritz.
Allegheny Steel Company, 2332 Oliver Bldg., Pittsburgh,	W. Lester Walker.
Booth & Flinn, Ltd., 1942 Forbes St., Pittsburgh,	Heber McDowell.
Pittsburgh Screw & Bolt Co., Pittsburgh,	E. G. Costin.
C. L. Flaccus Glass Company, 1107 Empire Bldg., Pittsburgh,	James G. McAuley.
The Rosenbaum Company, 5th Ave. & Liberty Ave., Pittsburgh,	C. M. Hartford.
John Eichleay, Jr., Co., S. 20th & Wharton Sts., Pittsburgh,	Harry O. Eichleay.
Pioneer Suspender Company, 315 N. 12th St., Philadelphia,	John A. Dahringer.
Pittsburgh Steel Foundry Co., 1208 House Bldg., Pittsburgh,	O. S. Pulliam.
R. & H. Simon Co., Easton,	Egon Ebert.
Williamsport Staple Co., Maple Place, Williamsport,	E. G. Knights.
Standard Sanitary Mfg. Co., New Brighton,	John M. Lithgow.
United States Radiator Co., West Newton,	J. F. Geary.
General Chemical Company, Newell,	E. J. Mullen.
The Dentists' Supply Co., York,	G. H. Whitely, Jr.
Smyser-Royer Co., York,	W. H. Myers.
G. W. Johnson Limestone Co., New Castle,	W. H. Britton.
McKee Glass Company, Jeannette,	Frank C. Branum.
American Steel & Wire Co., Frick Bldg., Pittsburgh,	H. A. Schultz.
A. B. Farquhar Company, Ltd., York,	Francis Farquhar.
Standard Steel Car Company, New Castle,	W. C. Graham.
Cambria Steel Company, Johnstown,	D. M. Stackhouse.
The Nolde & Horst Co., Reading,	Warren C. Detweiler.
Union Spring & Mfg. Co., New Kensington,	G. H. Channell.
Surpass Leather Co., 9th & Westmoreland Sts., Philadelphia,	F. Harrison.
Harrisburg Cigar Company, 500 Race St., Harrisburg,	H. H. Foy.
Stewart Silk Co., Easton,	Chas. J. Knowles.
Katz Underwear Co., Honesdale,	Sigmund Katz.
American Caramel Co., 347 Church St., Lancaster,	John Schmallbach.
H. Ellis & Co., 3rd & Ontario Sts., Philadelphia,	J. R. Anderson.
Samuel A. Crozer & Son, Upland, Delaware Co.,	Robert H. Castle.
Keasby & Mattison, Ambler,	Edward C. Scott.
Fort Pitt Bridge Works, Pittsburgh,	E. H. Beazell.
Pennsylvania Rubber Co., Jeannette,	G. W. Baum.

FIRM.	REPRESENTATIVE.
The Baldwin Locomotive Works, 500 N. 15th St., Philadelphia,	E. G. Thomas.
Joseph Reid Gas Engine Company, Oil City,	W. O. Platt.
Johnson-Baillie Shoe Co., Millersburg,	B. Ninimous.
A. M. Collins Mfg. Co., 226 Columbia Ave., Philadelphia,	Samuel R. Bradley.
Kreamer Hosiery Company, Nazareth,	Chas. W. Schmidt.
Powers-Weightman-Rosengarten Co., P. O. Box 1625, Philadelphia,	Wm. R. Armstrong.
The Huntingdon & Broad Top M. R. & C. C., Huntingdon,	A. E. Yohn.
Bessemer & Lake Erie R. R. Company, Carnegie Bldg., Pittsburgh,	Guy M. Gray.
The Atlas Portland Cement Co., Northampton,	Henry T. Raisbeck.
American Locomotive Company, 2101 Beaver Ave., N. S., Pittsburgh,	Carl A. Strom.
Standard Steel Works Co., Morris Bldg., Philadelphia,	Wm. Vollmer.
Otto Eisenlohr & Bro., 932 Market St., Philadelphia,	F. C. Eimerbrink.
Phillips-Jones Company, Pottsville,	W. J. Biever.
Shackamaxon Mills, 153 W. Allegheny Ave., Philadelphia,	Thomas M. Corcoran.
Atlas Powder Company, Reynolds,	W. E. Fletcher.
Midvale Steel Company, Nicetown, Philadelphia,	W. E. Firth.
Logan Iron & Steel Company, 400 Morris Bldg., Philadelphia,	Calvin Dean.
West Virginia Pulp & Paper Co., Tyrone,	Edwin S. Hooker.
Lee Tire & Rubber Company, Conshohocken,	Harry Berk.
Pittsburgh-Buffalo Company, Canonsburg,	John E. Lynch.
National Biscuit Co., Philadelphia	Earl D. Babst.
National Biscuit Co., Pittsburgh,	Earl D. Babst.
Oliver & Snyder Steel Co., S. 10th & Muriel Sts., Pittsburgh,	D. C. Keighley.
American Window Glass Co., 8th & Clay Ave., Jeannette,	H. S. Conklin.
Carbon Steel Co., Pittsburgh,	H. R. Fothergill.
Pittsburgh Plate Glass Co., Ford City,	Morrison & Kelly.
Hamilton Watch Co., Lancaster,	Robert E. Miller.
Philadelphia & Reading Ry. Co., Reading,	G. H. Smeltzer.
Standard Chain Co., Pittsburgh,	Frank A. Bond.
Page Woven Wire Fence Co., Monessen,	Herbert H. Ryde.
Erie City Iron Works, Erie,	George T. Bliss.
Pittsburgh Forge & Iron Co., 1003 Penn Ave., Pittsburgh,	Charles Richardson.
American Cigar Company, 12th & Washington Ave., Philadelphia,	G. A. F. Plomgren.
Sun Company, 904 Morris Bldg., Philadelphia,	Mr. Duke.
Public Ledger Company, Philadelphia,	L. H. Vriesbach, Jr.
Bethlehem Steel Company, South Bethlehem,	George T. Fonda.
American Car & Foundry Co., Berwick,	W. E. Jarrard.
Elliott-Fisher Company, Harrisburg,	John N. Smith.
The Scranton Button Co., Scranton,	P. L. Sylvester.
The Thomas Iron Company, Easton,	A. R. Palmer.
Hammermill Paper Co., Erie,	C. S. Weir.
The Hazard Mfg. Co., Ross & State Sts., Wilkes-Barre,	James Millen.
Bollinger-Andrews Construction Co., Verona,	J. W. Fisher.
Oliver Iron & Steel Co., Pittsburgh,	Thomas J. Jones.
The Philadelphia Electric Co., 10th & Chestnut Sts., Philadelphia,	B. Frank Day.
Sheppard & Myers Co., Hanover,	G. W. Plowman.
Lockhart Iron & Steel Co., Pittsburgh,	T. J. Gillespie.
The McConway & Torley Co., 48th St. & A. V. Ry., Pittsburgh,	Geo. W. McCandless.
Dreuding Bros. Co., 5th & Master Sts., Philadelphia,	Walter F. Drueding.
The Curtis Publishing Co., Independence Square, Philadelphia,	Geo. F. Starr.
The William Cramp & Sons Co., Philadelpiha,	H. W. Scott.
Carnegie Steel Company, Carnegie Bldg., Pittsburgh,	L. H. Burnett.
General Electric Co., Erie,	H. A. Nye.
The Lackawanna Mills, Scranton,	R. G. Norton.
J. H. & C. K. Eagle, Shamokin,	Wm. Giles.
North American Lace Co., 8th St. & Allegheny Ave., Philadelphia,	J. H. Banmgartner.
Sharon Steel Hoop Company, Sharon,	Geo. W. Short.
The Eastern Steel Co., Pottsville,	T. Jones.
Oil Well Supply Co., Oil City,	E. R. Gnade.

FIRM.	REPRESENTATIVE.
American Engineering Co., Aramingo & Cumberland Sts., Philadelphia,	J. W. Seavey.
Lehigh Coke Company, Sonth Bethlehem,	R. S. Brunner.
B. F. Stnrtevant Company, 135 N. 3rd St., Philadelphia,	A. L. Bncknam.
Folwell Brother & Company, 3rd & Cambria Sts., Philadelphia,	Mitchell Stend.
Electric Storage Battery Co., 19th & Allegheny Ave., Philadelphia,	E. G. Steinmetz.
The Penna. Central Brewing Co., 431 N. 7th Ave., Scranton,	A. G. Hill.
Stehli & Co., Lancaster,	T. M. Shoemaker.
American Wood Working Machinery, Montgomery,	D. W. Shollenberger.
Reymer & Brothers, Inc., Pittsbnrgh,	F. P. Smitley.
Pittsburgh Terminal Railroad & Coal Co., Pittsbnrgh,	N. T. Davy.
Harrisburg Pipe & Pipe Bending Co., Harrisburg,	Edward C. Smith.
Curtis & Jones Co., 702 N. 8th St., Reading,	Fred Schleicher.
Westinghouse Air Brake Co., Wilmerding,	John T. Small.
Carbondale Knitting Mills, Carbondale,	James S. Lanahan.
The Union Switch & Signal Co., Swissvale,	J. G. Schrender.
Lukens Iron & Steel Co., Coatesville,	P. R. Baker.
J. C. Blair Co., Huntingdon,	E. M. C. Africa.
Pittsburgh & Lake Erie R. R., Pittsburgh,	A. D. Brown.
The Guyer Hat Co., 120 Columbia Ave., Philadelphia,	John H. Meader.
M. Oppenheimer & Co., 115 Seventh St., Pittsbnrgh,	William Hemke.
Sheffield Glass Bottle Co., Sheffield,	W. J. Ganson.
Wilcox Glass Bottle Co., Sheffield,	W. J. Ganson.
Penn Hardware Company, Reading,	Geo. E. Tyson.
Greensbnrg Glass Co., Greensbnrg,	J. M. Ramaley.
Haddon Hosiery Co., Inc., 346 E. Walnut Lane, Germantown,	George Slater.
Frank P. Heid, Juniper & Vine Sts., Philadelphia,	W. A. Harding.
The John T. Dyer Qnarry Co., 207 DeKalb St., Norristown,	
Indian Creek,	Adam Devaney.
Birdsboro,	Harry Schwartz.
Howellville,	W. B. Devaney.
E. Michelbach & Sons, 1308 N. Diamond St., Philadelphia,	Joseph Michelbach.
W. J. Gilmore Drug Co., 426 Seventh Ave., Pittsbnrgh,	George F. Eckhardt.
The Reed & Lovatt Mfg. Co., Weatherly,	R. Thorp.
Weaver Organ & Piano Co., York,	C. D. Bond.
The National Malleable Castings Co., Sharon,	N. G. Brayer.
Standard Sanitary Mfg. C., Bessemer Bldg., Pittsburgh,	E. J. Sieber.
The Lackawanna Mills, P. O. Box 577, Scranton,	R. G. Norton.
S. R. Moss Cigar Co., Lancaster,	Henry J. Ryder.
The Orinoke Mills, Ruth bel. Somerset St., Philadelphia,	E. Shaw.
M. Kohn & Son, 809 Arch St., Philadelphia,	Prescott Thompson.
Jones & Laughlin Steel Co., Pittsburgh,	S. W. Shaw.
The Penna. Railroad Co., N. J. Div., Jersey City, N. J.,	J. O. Yonng.
Reed Mfg. Co., Erie,	Albert Bayton.
Franklin Silk Mill, York,	Sam. Rutland.
Max Manson & Son, 8th & Spring Garden Sts., Philadelphia,	Samuel F. Manson.
Pennsylvania Smelting Co., Pittsburgh,	Chas. S. Barnnm.
D. J. Lewis & Sons, Inc., Minersville,	John E. Lewis.
J. B. Lippincott Co., 227 S. 6th St., Philadelphia,	Alfred C. Balch.
The Stead & Miller Co., N. W. Cor. 4th & Cambria Sts., Philadelphia,	J. W. Snowden.
Quaker City Iron Works, Richmond & Tioga Sts., Philadelphia,	Chas. E. Frick.
Littlestown Silk Co., Littlestown,	J. W. Thomas.
Central Tube Company, 1805 First National Bank Bldg., Pittsbnrgh,	W. S. Tallman.
Donora Southern R. R. Co., (A. S. & W. Co.), Frick Bldg., Pittsburgh,	H. A. Schultz.
Williamsburg Quarry, (A. S. & W. Co.), Frick Bldg., Pittsbnrgh,	H. A. Schnltz.
Donora Steel Works, (A. S. & W. Co.), Frick Bldg., Pittsbnrgh,	H. A. Schnltz.
Farrell Works, (A. S. & W. Co.), Frick Bldg., Pittsburgh,	H. A. Schnltz.
Allentown Works, (A. S. & W. Co.), Frick Bldg., Pittsbnrgh,	H. A. Schultz.

FIRM.	REPRESENTATIVE
Donora Wire Works, (A. S. & W. Co.), Frick Bldg., Pittsburgh,	H. A. Schultz.
Rankin Works, (A. S. & W. Co.), Frick Bldg., Pittsburgh,	H. A. Schultz.
Braddock Works, (A. S. & W. Co.), Frick Bldg., Pittsburgh,	H. A. Schultz.
Bamford Bros. Silk Mfg. Co., Wilkes-Barre,	Lawrence Casey.
Reading Iron Company, Reading,	G. W. Delaney.
American Radiator Co., Titusville,	A. M. Williams.
Keystone Laundry Co., 1200 Chateau St., N. S., Pittsburgh,	C. L. Pflaum.
American Wire Fabric Co., Mt. Wolf,	W. E. Strevig.
The Reyburn Mfg. Co., 23rd & Allegheny Ave., Philadelphia,	E. L. McCusker.
Braeburn Steel Co., Braeburn,	George H. Neilson
J. E. Lonergan Co., 213 Race St., Philadelphia,	C. M. Holcomb.
John Rich Brothers, Woolrich,	E. C. Tobias.
The F. H. White Co., 10th & Hamilton Sts., Philadelphia,	H. P. Glosman.
Wm. Wharton, Jr., & Co., Inc., 25th & Washington Ave., Philadelphia,	John H. Cornelius.
Standard Steel Car Company, Butler,	J. H. Allman.
Forges Steel Wheel Co., Butler,	J. H. Allman.
Thatcher Mfg. Co., (Kane, Pa.), Elmira, N. Y.,	R. A. Brown.
Abbotts Alderney Dairies, 31st & Chestnut Sts., Philadelphia,	W. L. Moore.
Mount Carmel Cigar Co., Mount Carmel,	John W. Murr.
American Bridge Co., Pittsburgh,	J. M. Martin.
Wyandotte Silk Company, Northampton Heights, South Bethlehem,	D. C. Ryman.
Peters Paper Co., Latrobe,	James F. Peters.
The Spirella Co., Inc., (works at Meadville), Gluck Bldg., Niagara Falls, N. Y.,	H. H. Grinager.
Bryden Horse Shoe Co., Catasauqua,	P. E. Miller.
Camden Curtain & Embroidery Co., 10th & Scull Sts., Lebanon,	A. Rosenstein.
Allentown Portland Cement Co., Allentown,	Ray Weston.
Germer Stove Co., Erie,	E. G. Germer.
The Shenango Furnace Co., Sharpsville,	G. D. Devitt.
Richard Hey & Son, Inc., Main St., Manayunk, Philadelphia,	Francis J. C. Stark.
Sheip & Vandergrift Co., Inc., 814 N. Lawrence St., Philadelphia,	Nelson M. Vandergrift.
Wm. Mann Company, 529 Market St., Philadelphia,	C. H. Prickett.
Westinghouse Electric & Mfg. Co., East Pittsburgh,	C. B. Auel.
The American Pulley Co., 4200 Wissahickon Ave., Philadelphia,	Chas. E. Brinley.
Philadelphia Bag Co., Water & Tasker Sts., Philadelphia,	Mr. Ward.
The York Card & Paper Co., 24th & Ellsworth Sts.,	John Graham.
George P. Pilling & Son Co., 23rd & Arch Sts., Philadelphia,	Wm. M. Peters.
Lowell M. Palmer, R. F. D. No. 11, York,	W. R. Bupp.
Armstrong Cork Co., Pittsburgh,	J. W. Sloan.
Penna. Chocolate Co., Pittsburgh,	Earle R. Marvin.
The Hitchner Biscuit Co., West Pittston,	J. A. Hitchner.
Acme Tea Co., York Ave. & Noble Sts., Philadelphia,	John Glenn.
Glenshaw Glass Co., Inc., Glenshaw,	S. B. Meyer.
Federal Cigar Co., (Banner Branch), 201 S. Prince St., Lancaster,	J. S. Lang.
American Bitumastic Enamels Co., 322 S. Delaware Ave., Philadelphia,	S. R. Rickards.
Philadelphia Home Bread Co., 1433 N. 12th St., Philadelphia,	Geo. H. Dare.
Manufacturing Company of America, 439 N. 12th St., Philadelphia,	A. H. Lupton.
National Foundry Co., Erie,	J. E. Place.
Central Penna. Lumber Co., Williamsport,	F. W. Simmons.
Union Connellsville Coke Co., 57 West Main St., Uniontown,	Michael McPartland.
Nelson Valve Co., Chestnut Hill, Philadelphia,	H. I. Landis.
Jos. Soisson Fire Brick Co., Connellsville,	V. H. Soisson.
Berney-Bond Glass Co., 80 Mechanic St., Bradford,	
Smethport,	W. J. Johnson.
Hazlehurst,	J. S. Nogar.
Clarion,	B. F. Hazelton.

FIRM.	REPRESENTATIVE.
Leon-Ferenbach Silk Co., Bradford,	E. L. Cetwick.
Morris & Bailey Steel Co., Pittsburgh,	F. M. Reed.
Harrison Safety Boiler Works, 17th bel. Allegheny Ave., Philadelphia,	W. S. Giele.
Smith & Furnush Machine Co., S. W. Cor. Hancock & Somerset Sts., Philadelphia,	Thomas W. Allen.
C. Schmidt & Sons Brewing Co., 127 Edward St., Philadelphia,	A. W. Brockmeyer.
Western Electric Co., 11th & York Sts., Philadelphia,	W. J. Segelkin.
Walker & Kepler, 531 Chestnut St., Philadelphia,	C. H. Hagy.
Warren Furniture Co., Warren,	T. K. Creal.
Eclipse Laundry Company, Stevenson & Forbes Sts., Pittsburgh,	C. E. Snyder.
Skinner Engineer Co., Erie,	R. C. Stevens.
Binney & Smith Co., 81 Fulton St., New York,	S. F. Kress.
A. J. Logan Co., 2839 Liberty Ave., Pittsburgh,	R. B. Harrison.
Miner Hillard Milling Co., Coal Exchange Bldg., Wilkes-Barre,	S. C. Coldren.
Fort Pitt Steel Casting Co., Houghton,	A. H. Anthony.
Edwin J. Schoettle Co., 237 N. 6th St., Philadelphia,	Otto Woerner.
National Car Wheel Co., West Homestead,	Sherman Shock.
The Martin Carriage Works, York,	George A. Jones.
Phoenix Portland Cement Co., Nazareth,	Edward H. Tait.
Elm Tobacco Co., 232 Elm St., Lancaster,	H. O. Kaufman.
H. T. Paiste Co., 3201 Arch St., Philadelphia,	H. L. Yearsley.
Rowland Mills, (Cleveland Worsted Mills Co.), 2000 E. Allegheny Ave., Philadelphia,	W. R. Tappen.
United States Sanitary Mfg. Co., Monaca,	E. J. Daugherty.
Susquehanna Silk Mills, Jersey Shore,	George F. Massa.
Susquehanna Silk Mills, Northumberland,	George F. Massa.
Susquehanna Silk Mills, Lewistown,	George F. Massa.
Susquehanna Silk Mills, Milton,	George F. Massa.
Barrett Mfg. Co., Frankford, Philadelphia,	A. G. Peterkin, Jr.
Moore Bread Co., 1119 Spring Garden St., Philadelphia,	Alonza Beckett.
The Bessemer Gas Engine Co., Grove City,	D. F. Black.
W. W. Lindsay & Co., 902 Harrison Bldg., Philadelphia,	E. C. Lindsay.
S. L. Allen & Co., 5th St. & Glenwood Ave., Philadelphia,	H. E. Moore.
Lawrence Portland Cement Co., Siegfried,	Charles A. Porter.
Thomasville Stone & Lime Co., Thomasville,	Chas. F. Gormley.
David S. Brown & Son, 69th & Haverford Sts., Philadelphia,	Sketchley Morton.
Ajax Iron Works, Corry,	L. R. Bliss.
Chicago Bridge & Iron Works, Greenville,	Raymond B. Gamble.
American Baptist Pub. Co., 1329 Lombard St., Philadelphia,	Jos. C. Kauffman.
Foss-Hughes Co., 21st & Market Sts., Philadelphia,	F. H. Weidman.
Sterling Silk Glove Co., Bangor,	W. R. Jordan.
Lehigh Foundry Co., Fullerton,	W. L. Shaw.
Postal Telegraph Cable Co., 1326 Chestnut St., Philadelphia,	J. H. Wilson.
Palace Ribbon Mfg. Co., Box 364 Allentown,	John Burley.
Reading Screw Co., Norristown,	F. G. Ellis.
Henderson & Bro., Inc., 25th St. bel. Spruce St., Philadelphia,	Wm. J. Henderson.
International Text Book Co., Scranton,	J. A. Frantz.
J. C. Fitzpatrick, 242 Cottage Ave., Tamaqua,	J. C. Fitzpatrick.
Kneedler & Co., Bridesburg,	Henry M. Kneedler.
Chambersburg Engineering Co., Chambersburg,	H. E. Derbyshire.
Raymond Mfg. Co., Ltd., Corry,	F. E. Whittlesey.
Beggs & Graham, Inc., 200 Chancellor St., Philadelphia,	Wm. J. Byrnes, Jr.
Miller Lock Co., 4533 Tacony St., Frankford,	H. J. White.
Wyle T. Wilson, 1151 N. 3rd St., Philadelphia,	John Sacks.
J. Thompson Riday & Son Co., 1010 Race St., Philadelphia,	J. F. Kelly.
United Cigar Mfg. Co., Seven Valley,	J. E. Deveny.
Parkesburg Iron Co., Parkesburg,	George W. Lufkin.
P. Duff & Sons, 918 Duquesne Way, Pittsburgh,	Chas. D. Woods.
Hockensmith Wheel & Mine Car Co., Penn Station,	W. K. W. Hanson.
Star & Crescent Co., Lehigh Ave. & Hancock St., Philadelphia,	Robt. N. Whinney.
David Lupton's Sons Co., Allegheny Ave. & Tulip St., Philadelphia,	E. T. Wilkinson.

FIRM.	REPRESENTATIVE.
The Keuber Foundries, Inc., Easton,	W. W. Pettit.
Henry J. Wampole & Co., Inc., 426 Fairmount Ave., Philadelphia,	George R. Wallace.
Moore & White Company, 15th St. & Lehigh Ave., Philadelphia,	S. A. Hibbs.
The Floyd Wells Co., Royersford,	Oscar C. Winters.
M. B. Laubach Co., Indiana Ave. & A. St., Philadelphia,	Wm. E. Underwood.
J. N. Susskind & Co., 1210 Race St., Philadelphia,	M. H. Wegman.
H. O. Wilbur & Sons, Inc., 235 N. 3rd St., Philadelphia,	B. K. Wilbur.
C. B. Porter Co., 128 N. 2nd St., Philadelphia,	H. J. Florey.
The Junoform Company, Girard Ave. & 62nd St., Philadelphia,	Goodwin B. Smith.
Fidelity Glass Co., Tarentum,	Howard E. Robinson.
Warren-Axle & Tool Co., Warren,	D. W. Murphy.
Mack Bros. Motor Car Co., Allentown,	R. M. Eckert.
Railway Steel Spring Co., Latrobe,	J. J. Eckfelds.
Phila. Pile Fabric Mills, Westmoreland & Mascher Sts., Philadelphia,	Albert Wright.
Edward G. Budd Mfg. Co., Philadelphia,	William B. Read.
Equitable Gas Co., Pittsburgh,	J. A. Reed.
Washington Tin Plate Co., Washington,	Thomas McDonough.
Otis Elevator Co., 12th & Sansom Sts., Philadelphia,	H. F. Winters.
Greenville Steel Car Co., Greenville,	James Dimmick.
Delta File Works, Philadelphia,	David Halstead.
Penna. R. R. Co., (Northern Div.), Buffalo, N. Y., Emporium,	E. L. Klock.
Joblin Mfg. Co., 141 N. 12th St., Philadelphia,	Hyman Joblin.
Supplee Alderney Dairies, 11th, Jefferson & Marvine Sts., Philadelphia,	G. C. Shelmme.
Traylor Engineering & Mfg. Co., Allentown,	F. W. Crispen.
Standard Chain Company, Pittsburgh,	
York,	Aaron Fidler.
York,	Adam Garver.
Carlisle,	Robert Sipe.
Braddock,	Fred Dyberg.
Asbestos Fibre Spinning Co., North Wales,	George Schafenacker.
Wanamaker & Brown, Philadelphia,	William F. Kell.
Hallahan & Sons, Inc., 10th & Washington Sts., Philadelphia,	Frank G. Gasslain.
Lehigh Valley R. R. Co., South Bethlehem,	
Easton,	Amos Turner.
Hazleton,	J. P. Laux.
Sayre,	J. C. Seeger.
Coxton,	W. G. Burrows.
Commercial Truck Co., 27th & Brown Sts., Philadelphia,	J. F. Muhlig.
Duquesne Steel Foundry Co., Arrott Bldg., Pittsburgh,	D. C. Bakewell.
Edward P. Henson & Co., 921 N. Delaware Ave., Philadelphia,	Curt Wollham.
Mohn Bros. Elec. Laundry Co., 2833 Penn Ave., Pittsburgh,	E. R. Reno.
Wm. H. Horn & Bro., 451 N. 3rd St., Philadelphia,	Norris J. Horn.
Bayuk Bros. Co., Philadelphia,	Harvey L. Hirst.
American Sheet & Tin Plate Co., Hudson Terminal, New York,	
Vandergrift,	A. H. Beale.
Monessen,	U. S. Smiley.
New Castle,	Geo. C. Stone.
Farrell,	W. H. Davis.
New Castle,	D. S. Pyle.
McKeesport,	S. M. Cooper.
Scottdale,	W. L. Davis.
New Kensington,	Jos. E. Hartill.
New Kensington,	Jenkin Howell.
Scottdale,	A. J. Skemp.
Farrell,	H. M. Steel.
S. S. White Dental Mfg. Co., 211 S. 12th St., Philadelphia,	John Kennedy.
Berks-Gibbon Co., Inc., 140 Turner St., Philadelphia,	Wm. J. Erkert.
D. G. Dery, 520 E. 4th St., South Bethlehem,	A. Teste.

THE PERSONNEL OF THE SUB-COMMITTEES APPOINTED BY THE INDUSTRIAL BOARD IS GIVEN ON THE FOLLOWING PAGES. MOST OF THESE COMMITTEES WERE GATHERED TOGETHER BY A SPECIAL COMMITTEE OF THE INDUSTRIAL BOARD, CONSISTING OF COMMISSIONER JACKSON, GEORGE S. COMSTOCK, AND JAMES C. CRONIN. MRS. SAMUEL SEMPLE DIRECTED THE ORGANIZATION AND WORK OF THE COMMITTEE ON BAKERIES AND JOHN P. WOOD PERFORMED THE SAME DUTIES WITH RESPECT TO THE COMMITTEE ON TEXTILE MACHINERY.

SUB-COMMITTEES OF INDUSTRIAL BOARD.

Bakeries.

The Committee on this subject was composed of the following:

R. W. Kincaid, Attorney for Master Bakers' Association of Philadelphia.

William Sturma, 1701 Woodstock St., Philadelphia, Master Bakers' Association of Philadelphia.

Frederick C. Rexer, Master Bakers' Association of Philadelphia.

Charles Katz, Master Bakers' Association of Philadelphia.

Joseph Schafer, Master Bakers' Association of Philadelphia.

David McKibbin, Chief of Division of Meat and Cattle Inspection, Philadelphia, Department of Public Health and Charities, Philadelphia.

Robert M. Simmers, Dairy and Food Department, Commonwealth of Pennsylvania.

W. E. Supplee, Dairy and Food Department, Commonwealth of Pennsylvania.

L. J. Kolb, Kolb Baking Co., Philadelphia.

James B. Arthur, Secretary of Ward Baking Co., 464 Riverside Drive, New York City.

Christian Bonnet, 1462 Newkirk St., Philadelphia. Master Bakers' Association of Philadelphia.

Adam B. Ehresmann, 1107 Shackamaxon St., Philadelphia, Master Bakers' Association, Philadelphia.

Carl Stiefel, 1925 West Somerset St., Philadelphia, Master Bakers' Association of Philadelphia.

Fred Leiser, 5046 Baltimore Ave., Philadelphia, Master Bakers' Association, Philadelphia.

Howard Benton Lewis, Assistant Attorney for Department of Labor and Industry, Philadelphia.

Theo. Brennecke, The Fleischmann Co., 1221 Race St., Philadelphia.

F. L. Schlichenmayer, baker, 712 S. 21st St., Philadelphia.

Christ Kerker, Bakers' Int. Union, 506 Sherman Ave., N. S., Pittsburgh.

Ludwig Weisshart, Bakery and Confectionery Workers' Local No. 12, Wylie Ave., Pittsburgh.

Francis J. Albrecht, Bake Oven Builder, 1146 Penn Ave., Pittsburgh.

Ralph D. Ward, Ward Baking Company, 6452 Penn Ave., New York City.

Chas. Schmidt, Philadelphia Master Bakers' Association, 4730 Tacony St., Frankford, Philadelphia.

Chas. A. Walters, F. Walters & Sons, Inc., West Bridgewater.

Samuel Caplan, Caplan Baking Co., 73-79 Logan St., Pittsburgh.

O. C. Orr, O. C. Orr Baking Co., New Castle.

Louis P. Schmitt, Liberty Baking Co., 6537 Meadow St., Pittsburgh.

Jas. McLaren, F. Walters & Sons, Inc., 75 St. Nicholas Bldg., Pittsburgh.

Hugh Matchett, 4911 Kincaid St., E. E., Pittsburgh.

W. Kruczynna, (Bakery Workers), 259 Main St., Pittsburgh.

Philip Knopf, Bakers' Union Local 44, 1206 Colwell St., Pittsburgh.

J. S. Purncker, LaBelle Bakery, 5821 Penn Ave., Pittsburgh.

F. N. Armstrong, V. P. & Mgr., Diesenberry Baking Co., 504 Lloyd St., E. E., Pittsburgh.

M. J. Baker, M. A. Bakers Sons, 522 S. Main St., Pittsburgh.

Ed. A. Zepfel, Representing Mary M. Zepfel, 209 North Ave., Millvale.

J. M. Sterling, Inspector, 505 Main St., Latrobe.

Miss Elizabeth Torrens, Inspector, 5903 Penn Ave., Pittsburgh.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

Dr. John C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Compressed Air.

The Committee on this subject was composed of the following:

George T. Cousins, The Ingersoll-Rand Co., New York City.

Walter E. Chick, Pennsylvania Steel Co., Steelton, Pa.

William P. Eales, Travelers' Insurance Company, Hartford, Conn.

H. B. Griner, Chicago Pneumatic Tool Co., Chicago, Ill.

G. P. May, Travelers' Insurance Co., Hartford, Conn.

M. M. Sheedy, Safety Inspector, P. R. R. Co., Philadelphia.

C. D. Porter, P. R. R. Co., Asst. Engr. Motive Power, Altoona.

Chas. Gunigan, Fidelity & Casualty Co., Philadelphia.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Lew R. Palmer, Chief Inspector, Department of Labor and Industry, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Blowers and Exhausters.

The Committee on this subject was composed of the following:

H. N. Middleton, B. F. Sturtevant Co., Philadelphia.

Richard G. Williams, The Norton Company, Worcester, Mass.

John Roach, New Jersey Department of Labor and Industry, Trenton, New Jersey.

Harvey Baker, Metal Polishers' Union, Meade Bldg., Cincinnati, O.

C. K. Dyer, Buffalo Forge Co., Buffalo, N. Y.

W. E. Chick, Pennsylvania Steel Co., Steelton, Pa.

William P. Eales, Travelers' Insurance Co., Hartford, Conn.

Charles T. Smith, Pittsburgh Emery Wheel Co., Pittsburgh.

William L. Plack, Committee on Blower Systems of the National Fire Protection Association, Philadelphia.

E. B. Tolsted, Independence Inspection Bureau, Philadelphia.

A. B. Davenport, William Wharton Jr. Co., Philadelphia.

F. W. Pfeffer, American Blower System, Detroit, Mich.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Dr. J. C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisbrug.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Bolts, Nuts and Rivets.

The Committee on this subject was composed of the following:

Albert C. Baker, General Fire & Accident Ins. Co., New York City.

Wm. P. Eales, Travelers' Insurance Company, Philadelphia.

Elmer B. Tolsted, Independence Inspection Bureau, Philadelphia.

Chas. D. Sigsbee, Jr., American Iron & Steel Co., Lebanon.

Walter Sweet, General Fire & Accident Insurance Co., New York City.

William Rhodes, Baldwin Locomotive Co., Philadelphia.

Clement R. Hoopes, Hoopes & Townsend Co., Philadelphia.

Mrs. Edith W. Pierce, City of Philadelphia.

Representative, Pennsylvania Federation of Labor, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Steam Boilers.

The Committee on this subject was composed of the following:

Thomas E. Durban, Erie City Iron Works, Erie, Pa.

John M. Lukens, City of Philadelphia.

Charles Edgerton, Coatesville Boiler Works, Coatesville.

William P. Eales, Travelers' Insurance Co., Philadelphia.

H. W. Scott, Cramps Ship Yard, Philadelphia.

Addison A. Shook, Jones & Laughlin Co., Pittsburgh.

Representative, Pennsylvania Federation of Labor, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Cement and Lime.

The Committee on this subject was composed of the following:

Elmer B. Tolsted, Independence Inspection Bureau, 35 S. 5th St., Philadelphia.

Alex. Morrow, Atlas Portland Cement Co., Northampton, Pa.

J. Sharp Wilson, Crescent Portland Cement Co., Wampum, Pa.

David M. Kirk, Crescent Portland Cement Co., Wampum, Pa.

G. S. Brown, Alpha Portland Cement Co., Meixel St., Easton.

J. H. Van Middlesworth, Lawrence Portland Cement Co., Siegfried.

Representative, Pennsylvania Federation of Labor, Harrisburg.

John H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

John S. Spicer, Chemical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Electric Committee.

The Committee on this subject was composed of the following:

J. B. Douglass, Claim Agent, U. G. I. Co., Philadelphia.

M. G. Kennedy, U. G. I. Co., Philadelphia.

J. A. P. Crisfield, Engineer, U. G. I. Co., Philadelphia.

M. G. Sellers, Secretary Pennsylvania Electrical Contractors Asso., 1518 Sansom St., Philadelphia.

F. M. Shepard, President, Cates & Shepard, Philadelphia, President, Electrical Contractors Asso., Philadelphia.

Gilbert S. Smith, J. F. Buchanan & Co., 1719 Chestnut St., Philadelphia.

Walter Linn, Associate Secretary, Pennsylvania Manufacturers' Asso., 1310 Land Title Bldg., Philadelphia.

J. W. Gohien, Secretary, Keller Pike Co., 1213 Race St., Philadelphia.

Wm. T. Poulterer, Philadelphia Electric Co., Supply Department., 132 S. 11th St., Philadelphia.

Edward Lawrence, Chief Engineer, Quaker Lace Co., Philadelphia.

I. C. Walker, Walker & Kepler, 531 Chestnut St., Philadelphia.

B. A. Gesing, Folwell Bros. & Co., Philadelphia.

Elmer B. Tolsted, Department Engineer, Independence Inspection Bureau, Philadelphia.

R. F. Gale, Electrical Engineer, Midvale Steel Co., Philadelphia.

Washington Devereux, Bullitt Bldg., Philadelphia.

Rowland H. Levendy, Representing Commissioner Lewis T. Bryant, Department of Labor, Trenton, N. J.

Paul Spencer, Electrical Engineer, U. G. I. Co., Philadelphia.

Charles W. Parkhurst, Superintendent Electrical Department, Cambria Steel Company, Johnstown, Pa.

R. F. Patterson, Electrical Engineer, Pressed Steel Car Company, Pittsburgh.

Walter E. Chick, Safety Inspector, Pennsylvania Steel Company, Steelton, Pa.

H. W. Forster, Chief Engineer, Independence Inspection Bureau, Philadelphia.

A. P. Van Kirk, Westinghouse Air Brake Co., Pittsburgh.

Edward C. Smith, Harrisburg Pipe & Pipe Bending Co., 2043 Green St., Harrisburg.

P. H. Bartlett, The Philadelphia Electric Co., S. W. 10th & Chestnut Sts., Philadelphia.

P. J. Morrissey, Citizens Light Heat & Power Company of Penna., Johnstown.

Jno. Bailey, The Bell Telephone Company of Pennsylvania, 1230 Arch St., Philadelphia.

E. Friedlaender, Carnegie Steel Co., and A. I. & L. E. E., Braddock.

Edgar Z. Wallower, Harrisburg Light & Power Co., Harrisburg.

Jas. F. Conner, The United Gas Improvement Co., 1401 Arch St., Philadelphia.

C. M. Davis, Underwriters Asso. of Middle Dept., 316 Walnut St., Philadelphia.

Chas. Reutlinger, The Bell Telephone Company of Pennsylvania, 1230 Arch St., Philadelphia.

M. C. Goodspeed, General Electric Co., Erie, Pa.

D. T. Campbell, Penna. Elec. Association, Scranton, Pa.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

John H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Elevator Committee.

The Committee on this subject was composed of the following:

Edgar A. Weimer, Pennsylvania State Building Code Commission, Lebanon.

William P. Eales, Travelers' Insurance Co., Philadelphia.

S. A. Dies, Bureau of Building Inspection, Pittsburgh.

A. D. Carnagy, John A. Roebling's Sons, Trenton, N. J.

W. McD. Manning, Otis Elevator Co., Philadelphia.

Wm. Walker Johnson, Building Code Commission, Lebanon.

Mr. McIntyre, American Steel & Wire Company, Worcester, Mass.

Richard A. Gunagan, Fidelity & Casualty Co. of New York, 92 Liberty St., New York City.

Robert B. Howe, Fidelity & Casualty Co. of New York, 92 Liberty St., New York City.

James Cruise, Fidelity & Casualty Co. of New York, 92 Liberty St., New York City.

John Wright, Aetna Life Insurance Co., Hartford, Conn.

O. F. Parler, Aetna Life Insurance Co., 407 Walnut St., Philadelphia.

James F. Howe, American Steel & Wire Co., 94 Grove St., Worcester, Mass.

H. A. Schultz, American Steel & Wire Co., 828 Frick Bldg., Pittsburgh.

John R. Wolter, Bureau Elevator Insp. City of Philadelphia, 306 City Hall, Philadelphia.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Jacob Lightner, Supervising Inspector, Department of Labor and Industry, Philadelphia.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

John H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Foundries.

The Committee on this subject was composed of the following:

Edgar T. Thomas, Baldwin Locomotive Works, Philadelphia.

William P. Eales, Travelers' Insurance Company, Philadelphia.

H. A. Lomax, Mackintosh Hemphill & Company, Pittsburgh.

H. H. Clemens, Hays Mfg. Co., Erie.

R. A. Medina, Independence Inspection Bureau, Philadelphia.

A. E. McClintock, National Founders' Ass'n, West Lynn, Mass.

Valentine Barie, The Molders of the Pittsburgh District, 1119 Penn Ave., Pittsburgh.

Harry A. Colle, Eastern Penna. Conference Board, Cincinnati, O.

Chas. B. Torpey, International Molders' Union, 317 Parkway Bldg., Philadelphia.

Chas. R. Witham, International Molders' Union of N. America, Reading.

J. R. O'Leary, International Molders' Union, 317 Parkway Bldg., Philadelphia.

Henry Morgan, Secretary, The Metal Mfgrs. Asso. of Philadelphia. 1530 Chestnut St., Philadelphia.

M. C. Goodspeed, General Electric Co., Erie.

Ray Himrod, Secretary, Manufacturers Ass'n of Erie, Erie.

Jno. W. Pollock, Baldwin Locomotive Works, Philadelphia.

J. S. Goddard, American Steel Foundries, Pittsburgh.

Newlin T. Booth, Penn Steel Castings & Machine Co., Chester.

J. A. Lansing, Scranton Stove Works, Scranton.

J. J. Maloney, International Molders' Union, 317 Parkway Bldg., Philadelphia.

Otto G. Hitchcock, Hays Mfg. Co., Erie, Pa.

Geo. C. Marlack, Philadelphia Foundrymen, Cramps Ship Yard, Beach and Ball Sts., Philadelphia.

H. E. Campbell, Stove Foundries, Reading, Pa.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

J. S. Spicer, Chemical Engineer, Department of Labor and Industry, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Dr. J. C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board. Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Forging and Stamping.

The Committee on this subject was composed of the following:

L. E. Hickok, The D. Wilcox Mfg. Co., Mechanicsburg.

Carl B. Auel, Westinghouse Electric & Mfg. Co., Pittsburgh.

H. E. Derbyshire, Chambersburg Engineering Co., Chambersburg.

W. H. Kaiser, Metric Metal Works, Erie, Pa.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

G. S. Atkins, The Scranton Forging Co., Scranton.

George T. Fonda, Bethlehem Steel Co., Bethlehem, Pa.

W. P. Eales, Travelers' Insurance Co., Philadelphia.

G. P. May, Travelers' Insurance Co., Hartford, Conn.

M. M. Sheedy, Safety Inspector, P. R. R. Co., Philadelphia.

C. D. Porter, P. R. R. Co., Asst. Engr. Motive Power, Altoona

Chas. Gunigan, Fidelity & Casualty Co., Philadelphia.

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Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Hoists and Conveyors.

The Committee on this subject was composed of the following:

Walter Linn, Penna. Mfgrs. Association, Philadelphia.

Walter A. Hall, Yale & Towne Mfg. Co., Stamford, Conn.

A. S. Bentz, Valley Railways & United Electric Co., Lemoyne.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

W. L. Haynes, Wm. Sellers & Co., Inc., Philadelphia.

Edward H. Schell, Henry Gilbert & Son, Harrisburg.

Elmer B. Tolsted, Independence Inspection Bureau, Philadelphia.

W. E. Firth, Midvale Steel Co., Philadelphia.

Roy F. Gale, Midvale Steel Co., Philadelphia.

John H. Frank, Middletown Car Company, Middletown.

William Taylor Poulterer, Phila. Electric Co., Philadelphia.

A. B. Carnagy, John A. Roebling Sons Co., Trenton, N. J.

Representative, Pennsylvania Federation of Labor, Harrisburg.

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John H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

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John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Iron and Steel Mills.

The Committee on this subject was composed of the following:

Clarence E. Ralston, Jones & Laughlin Co., Pittsburgh.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

J. S. Herbert, Cambria Steel Company, Johnstown.

A. E. Logan, American Sheet & Tin Plate Co., Pittsburgh.

Marshall Williams, American Bridge Company, Pittsburgh.

L. H. Burnett, Carnegie Steel Co., Pittsburgh.

Thomas Ewing, National Tube Company, Pittsburgh.

R. E. Brown, National Tube Co., Pittsburgh.

C. L. Close, United States Steel Corporation, New York City.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Francis Feehan, Supervising Inspector, Department of Labor and Industry, Pittsburgh.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

John H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

Dr. John C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Ladders.

The Committee on this subject was composed of the following:

R. A. Medina, Independence Inspection Bureau, Philadelphia.

T. B. Donnelly, West Penn Electric Co., Connellsville.

Chas. Reutlinger, Bell Telephone Company of Penna., 1230 Arch St., Philadelphia.

H. B. Vincent, Penn Central Light & Power Co., Altoona.

W. F. Wettling, Indiana Bent Rung Ladder Co., Indiana.

P. H. Bartlett, Philadelphia Electric Co., Philadelphia.

J. Frank Martin, Duquesne Light Co., Pittsburgh.

T. C. Krewson, Krewson Mfg. Co., 803 Master St., Philadelphia.

Van Dusen Rukert, Eastern Pennsylvania Rung Co., Pottsville.

H. C. Lucas, Philadelphia Electric Co., Philadelphia.

John Bailey, Bell Telephone Co., 1230 Arch St., Philadelphia.

Wm. Berger, Berger Brothers, 237 Arch St., Philadelphia.

Chas. T. Thompson, Carpenters' International Union, 142 N. 11th St., Philadelphia.

J. F. Conner, United Gas Improvement Co., Philadelphia.

A. E. Davidson, Chesboro Whitman Co., 1167 1st Ave., New York City.

Clarence E. Ralston, Jones & Laughlin Co., Pittsburgh.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Theatre Building Code.

The Committee on this subject was composed of the following:

Edgar A. Weimer, President, Penna. State Building Code Commission, Lebanon.

W. W. Johnston, Engineer, Penna. State Building Code Commission, Lebanon.

William L. Plack, 1208 Chestnut St., Philadelphia.

J. William Morgan, Deputy State Fire Marshal, Harrisburg.

Nathan Appell, York, Pa.

Edwin Clarke, Chief Bureau of Building Inspection, Philadelphia.

C. Floyd Hopkins, 3rd & Market Sts., Harrisburg.

Walter Vincent, 1402 Broadway, New York City.

George W. Elliott, Fire Marshall, Philadelphia.

S. A. Dies, Chief, Bureau of Building Inspection, Pittsburgh.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

John H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

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James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Motion Picture Committee.

The Committee on this subject was composed of the following:

Edgar A. Weimer, Pres. Pennsylvania State Building Code Commission, Lebanon.

Edwin Clark, Chief, Bureau of Building Inspection, Philadelphia.

S. A. Dies, Chief, Bureau of Building Inspection, Pittsburgh.

W. Clarence Beatty, 347 Fifth Ave., Pittsburgh.

L. W. Rittenhouse, Pres. Pittsburgh Exhibitors' League Protective Association, Pittsburgh.

James Delves, Secretary Motion Picture Exhibitors' Association, Pittsburgh.

George W. Bennethum, Inter-State Film Co., Reading.

Samuel F. Wheeler, Pres. Philadelphia Exhibitors' League Protective Association, Philadelphia.

M. H. Hite, Pennsylvania Federation of Labor, Harrisburg.

W. T. Stewart, American Seating Company, Philadelphia.

C. Harry Kain, Architect, Harrisburg.

William H. Hoffman, The Hoffman Company, Architects, Philadelphia.

J. S. Mallory, City Fire Marshall, Philadelphia.

J. William Morgan, Deputy State Fire Marshall, Harrisburg.

Wm. Walter Johnston, Supervising Expert, Pennsylvania State Building Code Commission, Lebanon.

J. H. Walker, Civil Engineer, Department of Labor and Industry, Harrisburg.

Lew R. Palmer, Chairman, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

T. J. Gould, Secretary, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Machine Tools.

The Committee on this subject was composed of the following:

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Carl M. Hansen, Secretary, Workmen's Compensation Service Bureau, New York City.

H. W. Scott, Cramp Ship Building Company, Philadelphia.

L. M. Watson, A. B. Farquhar Company, York.

John H. Frank, Middletown Car Company, Middletown.

W. P. Eales, Travelers' Insurance Co., Philadelphia.

G. P. May, Travelers' Insurance Co., Hartford, Conn.
M. M. Sheedy, Safety Inspector, P. R. R. Co., Philadelphia.
C. D. Porter, P. R. R. Co., Asst. Engr. Motive Power, Altoona.
Richard Gunigan, Fidelity & Casualty Co., New York City.
Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.
R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.
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James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.
John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Paper Box Making.

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E. J. Shoettle, E. J. Shoettle Company, Philadelphia.
H. Thayleg, Thayleg's Paper Box Co., Philadelphia.
Representative, Pennsylvania Federation of Labor, Harrisburg.
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R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.
Dr. J. C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.
Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.
George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.
John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.
James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.
John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Power Transmission—Standard Railings and Toe Boards.

The Committee on this subject was composed of the following:

Edward Keenan, International Machinists' Association, Philadelphia.

William P. Eales, Travelers' Insurance Co., Philadelphia.

M. M. Sheedy, P. R. R. Co., Safety Inspector, Philadelphia.

C. S. J. Morgan, Jones & Laughlin Co., Pittsburgh.

F. J. Cakes, Link Belt Co., Philadelphia.

James H. Maurer, Pennsylvania Federation of Labor, Harrisburg.

W. L. Haynes, Wm. Sellers & Co., Inc., 1600 Hamilton St., Phila.

A. H. Leary, Baldwin Locomotive Works, 500 N. 15th St., Phila.

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R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

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George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Polishing and Grinding.

The Committee on this subject was composed of the following:

Louis T. Byers, The Abrasive Material Co., Philadelphia.

Wm. P. Eales, The Travelers' Insurance Co., Philadelphia.

A. B. Davenport, Jr., Wm. Wharton Jr. Co., Inc., Philadelphia.

K. E. Kerrick, Norton Company, Worcester, Mass.

R. G. Williams, Norton Company, Worcester, Mass.

G. W. Thomson, Norton Company, Worcester, Mass.

Chas. G. Smith, Pittsburgh Emery Wheel Co., Pittsburgh.

H. N. Middleton, B. F. Sturtevant Co., Philadelphia.

John Roach, New Jersey Department of Labor, Trenton, N. J.

Harvey Baker, Metal Polishers' Union, Cincinnati, Ohio.

C. K. Dyer, Buffalo Forge Co., Buffalo, N. Y.

W. E. Chick, Pennsylvania Steel Co., Steelton, Pa.

William L. Plack, Commitee on Blower Systems of the National Fire Protection Association, Philadelphia.

E. B. Tolsted, Independence Inspection Bureau, Philadelphia.
F. W. Pfeffer, American Blower System, Detroit, Mich.
G. P. May, Travelers' Insurance Co., Hartford, Conn.
M. M. Sheedy, P. R. R. Co., Safety Inspector, Philadelphia.
C. D. Porter, P. R. R. Co., Engineer Motive Power, Altoona.
Richard Gunigan, Fidelity & Casualty Co., New York City.
Chas. Black, Inspector, Department of Labor and Industry, Phila.
Jacob Lightner, Supervising Inspector, Department of Labor and Industry, Philadelphia.
R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.
Dr. J. C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.
Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.
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John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.
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John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Paint and Varnish.

The Committee on this subject was composed of the following:
Francis D. Patterson, M. D., Harrison Brothers, Philadelphia.
Milton Birch, Westmoreland Chemical & Color Co., Philadelphia.
Frank L. Campbell, John Lucas & Co., Philadelphia.
William P. Eales, Travelers' Insurance Co., Philadelphia.
Elmer Tolsted, Independence Inspection Bureau, Philadelphia.
Representative, Pennsylvania Federation of Labor, Harrisburg.
Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.
Dr. J. C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.
John S. Spicer, Chemical Engineer, Department of Labor and Industry, Harrisburg.
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Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.
George S Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Stationary Steam Engines.

The Committee on this subject was composed of the following:

A. S. Bentz, United Electric Co., Lemoyne, Pa.

William P. Eales, Travelers' Insurance Co., Philadelphia.

Walter E. Chick, Pennsylvania Steel Co., Steelton.

Edward Keenan, International Machinists' Ass'n, Philadelphia.

M. M. Sheedy, P. R. R. Co., Safety Inspector, Philadelphia.

C. S. J. Morgan, Jones & Laughlin Co., Pittsburgh.

E. J. Cakes, Link Belt Co., Philadelphia.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Jacob Lightner, Supervising Inspector, Department of Labor and Industry, Harrisburg.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

George S. Comstock, Industrial Board, Department of Labor and Industry, Harrisburg.

John P. Wood, Industrial Board, Department of Labor and Industry, Harrisburg.

James C. Cronin, Industrial Board, Department of Labor and Industry, Harrisburg.

John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Wood Working Machinery.

The Committee on this subject was composed of the following:

H. W. Forster, Independence Inspection Bureau, Philadelphia.

Carl M. Hansen, Workmen's Compensation Service Bureau, New York City.

H. W. Scott, Cramp Ship Bldg. Co., Philadelphia.

L. M. Watson, A. B. Farquhar Company, York, Pa.

John H. Frank, Middletown Car Co., Middletown, Pa.

Edward Keenan, International Machinists' Asso., Philadelphia.

William P. Eales, Travelers' Insurance Co., Philadelphia.

M. M. Sheedy, P. R. R. Co., Safety Inspector, Philadelphia.

C. S. J. Morgan, Jones & Laughlin Co., Pittsburgh.

F. J. Cakes, Link Belt Co., Philadelphia.

Representative, Pennsylvania Federation of Labor, Harrisburg.

Jacob Lightner, Supervising Inspector, Department of Labor and Industry, Harrisburg.

Lew R. Palmer, Chief Factory Inspector, Department of Labor and Industry, Harrisburg.

R. M. Pennock, Mechanical Engineer, Department of Labor and Industry, Harrisburg.

Dr. J. C. Price, Chief Medical Inspector, Department of Labor and Industry, Harrisburg.

Mrs. Samuel Semple, Industrial Board, Department of Labor and Industry, Harrisburg.

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John Price Jackson, Commissioner, Department of Labor and Industry, Harrisburg.

Quarries.

The Committee on this subject was composed of the following:

E. R. Armstrong, Bangor Excelsior Slate Co., Drake Bldg., Easton, Pa.

William Blake, Columbia & Bangor Slate Co., Bangor, Pa.

Oliver Bowles, Bureau of Mines, Washington, D. C.

William Bray, East Bangor Consolidated Slate Co., East Bangor, Pa.

L. Casay, Booth & Flinn, McCance, Pa.

C. C. Cumbler, G. W. Cumbler Estate, Steelton, Pa.

Charles Dentittle, American Brotherhood of Slate Workers, Bangor, Pa.

E. H. Edwards, Bangor, Pa.

J. E. Frable, American Brotherhood of Slate Workers, Bangor, Pa.

V. M. Frey, J. E. Baker Co., 114 N. George St., York, Pa.

P. F. Hanley, American Brotherhood of Slate Workers, Bangor, Pa.

J. S. Herbert, Cambria Steel Co., Johnstown, Pa.

Spencer P. Howell, U. S. Bureau of Mines, 40th and Butler Sts., Pittsburgh, Pa.

Richard Jackson, Stephens Jackson Co., Pen Argyl, Pa.

E. B. Jones, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.

Arthur Lamotte, E. I. Du Pont de Nemours Powder Co., Wilmington, Del.

Joseph D. Lloyd, Mgr., E. I. Du Pont de Nemours Powder Co., 701 Traders National Bank, Scranton, Pa.

James H. Maurer, State Federation of Labor, Commonwealth Trust Bldg., Harrisburg, Pa.

George H. Mutton, Columbia Bangor Slate Co., Bangor, Pa.

Herbert McDowell, Booth & Flinn, 1942 Forbes St., Pittsburgh, Pa.

J. King McLanahan, Jr., American Lime & Stone Co., Tyrone, Pa.

Thos. H. Palmer, American Brotherhood of Slate Workers, Pen Argyl, Pa.

Wm. H. Smith, North Bangor Slate Co., Bangor, Pa.

John S. Spicer, Chemical Engineer, Department of Labor and Industry.

H. L. Stahler, Aetna High Explosives Co., 2 Rector St., New York.

Albert Strunk, Bangor Washington Slate Co., Bangor, Pa.

John H. Walker, Civil Engineer, Department of Labor and Industry.

Allen G. Walton, Vice President, Hummelstown Brownstone Co., Waltonville, Pa.

Ray G. Whitesell, Northampton Hard-Vein Slate Co., 700 Walnut St., Easton, Pa.

Willard Young, Atlas Powder Co., Wilmington, Del.

THE INDUSTRIAL BOARD.

The Industrial Board of the Department of Labor and Industry was organized on February 3, 1914.

A large number of public hearings on the various laws affecting the Department have been held in different parts of the State. A stenographic report was taken of each of these hearings and in this way much valuable information has been secured. The operation of the laws affecting women and children has been given special attention.

The Board has met in full executive session at least once a month while one or more of its members have been on duty almost continuously. Shortly after its organization, the work of drawing up safety standards covering the various industries of the State was inaugurated. It was decided that the best way to handle this subject would be to have representative committees appointed for each branch of industry. This plan was adopted and a large number of voluntary committees have been at work drawing up suitable safety

regulations. Public hearings have been held on approximately twelve of these standards and the rules as adopted by the Board will become effective February 1, 1915. Additional rules will be issued in the near future. The committees who have performed this work are composed of representative employers, employees, and experts, who have devoted much time and expense to the work without cost to the Department.

Under the direction of the Board, a number of important surveys have been made with reference to the safety and sanitation of industrial establishments in Pennsylvania. The information which has been obtained with reference to the tobacco, textile, and canning industries of the State has been of particular value.

BAKESHOPS.

Mrs. Samuel Semple, Member, Pennsylvania Industrial Board.

The baking business, generally considered a minor factor in the business of the country, is in a State like Pennsylvania an economic interest worthy of most careful consideration. This is true on a financial basis, altogether aside from the matter of supplying human need in a manner conformable to modern customs of life. According to the census of 1910 there were in the State of Pennsylvania 3,185 bakeries, employing at that time, in all branches of the work, official and clerical forces included, 17,838 persons. Of these, 12,221 persons belonged to the wage earning class. For the year 1910 the value of bakeshop products in this State was $45,850,000, of which $18,520,000 was value added by the process of manufacture.

It is interesting to compare the 1910 census figures for other industries with those of the baking business, both as to the value of products, and the number of persons employed.

	Value Products.	Number Employed.
Baking business, ...	$45,850,000	12,221
Liquor business, ...	47,850,000	7,234
Woolen business, ...	47,447,000	27,400
Petroleum business, ...	53,088,000	2,900

The steel industry, with approximately ten times the value of products, employs approximately ten times the number of persons employed by the baking business. It is, therefore, apparent that the

amount of capital employed, the number of wage earners involved, and the proportion existing between that capital and the number of people it supplies with honorable employment testify that the baking business deserves careful and helpful consideration as one of the industries of Pennsylvania.

It has been the desire of the Industrial Board in promulgating regulations for the bakeshops of the State to preserve this attitude of helpful consideration toward all departments of the business interests involved. This has required specially careful work, because the term bakeshop covers the small shop operated by the owner, occasionally even without a helper, and also the large establishment where the employed are numbered by the hundreds. Justice and fairness to both these extremes have been desired. It has also seemed but just to consider established vested interests in property to such an extent as not to work undue hardship on the small establishment while striving to raise and maintain standards for the whole business. In the city of Philadelphia alone there are about one thousand cellar or basement bakeries. Each represents a life work or hope of some man with his little group of dependents and assistants; and each supplies a neighborhood convenience affecting many people. A cellar bakery is distinctly undesirable; and a basement bakery is open to many objections. Yet it is manifestly impossible to change immediately the existing widespread condition, bound up as it is with real estate conditions, by the hasty promulgation of revolutionary requirements. An actual measurement survey of 193 basement and cellar bakeshops in Philadelphia, lying south of Market Street and east of Broad Street, yielded the following information:

1 shop was under 6 feet in height.
64 shops were over 6 and under 7 feet in height.
80 shops were over 7 and under 7½ feet in height.
33 shops were over 7½ and under 8 feet in height.
15 shops were over 8 feet in height.

These figures amply illustrate both the need and the difficulty of bringing about better conditions. On behalf of the workers employed in the business, the need of such improvement is at once manifest. Bad air, heat, flour, dust, night hours, all contribute to lowering the standard of health for those engaged as bakers, especially for those employed in the smaller establishments, where the working conditions are at their worst. Playing no inconsiderable part in the whole problem is also the interest of the general public. Legislation on bakeshops began in Pennsylvania with an Act passed February 6th, 1731, to govern such business in the city of Philadelphia; and, in quaint language, required that all "bakehouses" should be of fireproof material. A bakeshop law affecting the whole State was passed in 1901.

and approved by Governor Stone. It is marked by the emergence of the recognition of the needs of the persons employed as well as of the general public. Subsequent legislation has continued this attitude, while always continuing insistence upon the demand for a sanitary bakeshop.

In formulating Volume I, No. 9, covering Bakeshops, the Industrial Board has brought into consideration one more special class of persons. Many a woman having suddenly thrust upon her the support of her family, turns instinctively to her conventional womanly occupation of baking, carrying it on in her own home. Such baking frequently supplies a real neighborhood need for true home-made products beside serving the economic purpose of keeping a family from the charity list. Such work is hereby given a standing as legitimate business that it has never before enjoyed.

To sum up, the Industrial Board has desired to look, first, to the development of the intent of law on the subject to secure increasingly sanitary bakeshops, in the interest of the persons employed therein, and of the general public; second, to the protection of all classes of persons dependent upon the baking business as a supporting industry; third, to the steady, if gradual, elimination of the old and bad type of bakeshops; and, fourth, to the improved construction and operation of all future bakeshops.

To these ends the Regulations set forth in Volume I, No. 9, have been prepared by a committee of practical bakers, representative bakeshop owners and experts on hygiene, working with a representative of the Industrial Board; they have been publicly discussed and advertised; and have been formally adopted by the Industrial Board.

Vol. I No. 1

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

POWER TRANSMISSION MACHINERY

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

POWER TRANSMISSION SAFE GUARDS

V-1.60 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—Unless otherwise provided for by regulations approved by the Industrial Board, the following Safety Standards for transmission of power shall apply also to all power driven machinery having exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gearings and belts.

V-1.614 EMERGENCY STOPS:

A station or stations must be provided in each room, section or department, to stop immediately all power transmission therein. Such station or stations shall be properly marked and easily accessible. The prompt stoppage of machinery in an emergency is hastened by allowing the full load to remain on all machines.

V-1.615 SET COLLARS:

Set collars shall be cylindrical and the screws used to fasten the same to the shaft shall not project beyond the largest periphery of the collar. Split collars, after assembly, shall conform to the above specifications for solid collars.

V-1.616 SET SCREWS:

All projecting set screws in moving parts of machinery shall be removed and replaced by flush set screws.

V-1.62 SHAFTS:

V-1.622 Horizontal shafts less than six feet from the floor or working platform level including dead ends of shafts, shall be guarded or protected by a standard railing, as provided for horizontal belts. Shafts less than twenty feet above floor or ground level and located over driveways, shall be guarded.

V-1.6226 Vertical shafts shall be encased or guarded to a height of six feet from floor or working platform, or be guarded

by a standard railing with not less than 15 inches clearance.

V-1.631 SHAFT COUPLINGS:

Revolving shaft couplings shall be cylindrical, and bolts used shall not project beyond the largest periphery of the coupling or its projecting flanges.

V-1.632 CLAMP COUPLINGS:

It is recommended that the use of this style of coupling be discouraged unless guarded by a cylindrical sleeve the full length of the coupling. New installation of such Couplings must be guarded by a cylindrical sleeve the full length of the coupling.

V-1.633 JAW CLUTCH COUPLINGS:

Jaw clutch couplings shall be provided with a cylindrical sleeve to cover the jaws.

V-1.634 UNIVERSAL AND FLEXIBLE COUPLINGS:

Universal and flexible couplings shall be guarded in a manner to remove all hazard.

V-1.635 FRICTION CLUTCH COUPLINGS:

Friction clutch couplings shall have their operating mechanisms completely guarded where exposed.

V-1.64 KEYS:

All projecting keys in revolving shafts, where such keys are exposed to contact. shall be made flush or shall be guarded.

V-1.650 PULLEYS:

When the bearings are not self-oiling and the clearance between the pulley and the bearing on line shafting is 36 inches or less, the pulley shall be completely guarded on the side nearest the bearing and all key ways in the shaft between such pulley and bearing shall be substantially encased or properly filled.

All parts of pulleys less than seven feet above the floor or working platform level shall be guarded underneath, or protected by a railing as provided for horizontal belts.

Where the space between two pulleys or between a pulley and a bearing is less than the width of the widest belt used, such space shall be guarded so that the belt cannot get between the pulleys or between the pulley and the bearing. A flange, on the side of the pulley nearest the bearing, or adjacent pulley, will be considered a guard.

On counter shafts, the space between pulleys and the nearest bearing shall not be less than the width of the belt used unless such space is properly guarded. A pulley with a flange on the side nearest the bearing, or adjacent pulley, will be considered as guarded.

V-1.66 GEARS:

All toothed, chain driven and sprocket gearing used in the transmission of power or on machinery, shall be completely enclosed wherever practicable, otherwise, at least to the base of the teeth.

It is strongly recommended that pulleys, gears, sprockets, sheaves, etc., having spoke arms should be guarded by discs, as nearly as possible flush with the rims of the wheels. Friction drives shall be completely guarded.

V-1.67 BELTS:

Vertical and inclined belts extending to within six feet of the floor or working platform level shall be substantially guarded as follows:

If the guard is placed less than six inches from the belt; with an enclosure on all sides, not over $\frac{1}{2}$ inch between members to a height of six feet above floor or working platform. If the guard is placed between 6 inches and 15 inches in clearance from the belt; with an enclosure on all sides, not over 2 inches between members to a height of 6 feet above floor or working platform. A standard railing may be used if placed to allow 15 inches clearance from the belt.

Where belts pass through a floor, a standard toe board shall protect the floor opening.

If the upper part of a horizontal belt is less than 6 feet from floor level or working platform the belt shall be guarded on the top and sides or provided with a standard railing at least 15 inches horizontally from the edge of the belt.

Overhead belts with the lower part 7 feet or less from the floor or working platform level, shall be guarded on the sides and bottom.

Passageways between the upper and lower parts of belts are prohibited unless special permit is granted by the Department of Labor and Industry. The space traversed by such a belt shall be completely barred against passage. Overhead belts 10 inches or more in width and more than 7 feet from floor or working platform level shall be guarded underneath in such a manner as to insure the safety of persons below.

V-1.671 BELT FASTENERS:

Hereafter no change belts shall be laced with metal.

V-1.672 SHIFTERS FOR BELTS AND CLUTCHES:

Shifters shall be provided for all tight and loose pulleys and clutches.

Shifter and disengaging levers, when suspended overhead shall be arranged to hang vertically when belt is on the loose pulley, or the clutch is disengaged. Belt shifters shall be automatically held so that the belt will not creep from the loose to the tight pulley.

All controls for stopping machines shall be within convenient reach of the operator from any operating position. Mechanical shifters for change belts are strongly recommended.

V-1.68 LUBRICATION:

Loose pulleys shall have oiling devices so arranged as to permit oiling in any position of Loose pulley when machinery is shut down.

V-1.682 An effective system of self-oiling is recommended for all bearings. Shafting shall not be oiled by hand while in motion.

V-1.683 Drip cups and pans shall be securely fastened.

V-1.684 Oiling shall be done only by authorized and experienced persons, properly clothed; and in accordance with approved and safe practice.

0.01 STARTING SIGNALS:

Ample notice should be given by means of an effective alarm or signal before transmission machinery is started.

V-1.685 INSPECTION:

All power transmission equipment should be given careful and thorough inspection at frequent and regular intervals and records kept of such inspection.

Caution. It is unlawful to remove guards from machinery, except when shut down, and in that case the guards must be replaced before starting.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Vol. I No. 2

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

STANDARD RAILINGS AND TOE BOARDS

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

STANDARD RAILINGS AND TOE BOARDS

V-6.12 The word "SHOULD" where used is to be understood as advisory and "SHALL" as mandatory.

(a) Standard railings shall be not less than three and one-half feet high and be provided with an additional rail midway between the top rail and the floor and shall be constructed in a permanent and substantial manner.

(b) If constructed of pipe, they shall be not less than $1\frac{1}{4}$ inches in inside diameter.

(c) If constructed of structural metal or bars, their section shall be at least equal to that of $1\frac{1}{2}$ inches x $1\frac{1}{2}$ inches x 3-16 inch angles.

(d) If constructed of wood, the posts shall be not less than 2 inches x 4 inches or its equivalent section, having rails not less than $\frac{7}{8}$ inch x 6 inches or its equivalent section.

(e) Posts and uprights shall be spaced not more than 8 feet apart.

(f) The rails when of metal shapes, metal bars or wood should be placed on the side of the posts that will afford the greatest support and protection.

(g) One or more sides may be hinged, preferably with self-closing gates.

(h) Railings already installed, if of substantial construction and proper position and approved by the Department of Labor and Industry will be accepted, although not permitted in new installation.

(i) Where panels are filled with substantial expanded metal or wire mesh, the middle rails may be omitted.

V-1.6121 TOE BOARDS:

In addition to standard railings a toe board or toe piece, 6 inches high, of wood or metal, shall be provided at the edge of:

(a) Working platforms, balconies and galleries if 6 feet or more above floor level;
(b) Floor openings and hoistways;
(c) Fly wheel and pulley pits;
(d) All other openings in floors and platforms where the safety of persons below is involved.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Vol. I No. 3

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

STATIONARY STEAM ENGINES

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

STATIONARY ENGINE GUARDS

III-12.5 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

NOTE:—By stationary engine is meant an engine normally in one place and used regularly for furnishing motive power. Farm and saw mill portable engines, portable hoisting engines and pumps used in construction work are not classed as stationary engines.

These standards are to be considered as also applicable to gas engines, pump engines and air compressors, if their construction is such as to bring them within the scope of these requirements.

Ample notice should be given by the use of an effective alarm or signal before machinery is started.

All steam, gas and hot air pumping engines and air compressors, shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gears, fly wheels and belts guarded as specified in Safety Standards, Volume I, No. 1.

It is recommended that an approved type of automatic engine stop, with speed limit device, be put on all stationary engines of more than 500 H. P.

No live steam connections should be made to the receiver of a compound engine without a reducing valve, set so that the pressure will be well within the safe working pressure of the receiver and of the low pressure cylinder.

Such a receiver shall be equipped with one or more safety relief valves of ample capacity, adjusted to a pressure well within the safe working pressure of the receiver and of the low pressure cylinder.

These valves shall be provided with facilities for testing, such as hand levers.

Jet condensers shall be provided with vacuum breakers to prevent water from entering the engine cylinders.

Steam traps used to discharge water from steam separators shall be so installed that their operation will be evident.

Each engine shall be equipped with an effective governor which will at all times automatically control the speed of the engine under varied loads, except where the load

itself acts as an effective governor. Each belt or rope driven governor shall be equipped with a device for stopping the engine in case the belt or rope should break.

Valve gears shall be so arranged, or other provisions made, that in the event of the load being removed, the engine will stop if the governor fails to act. (A broken belt stop will be considered sufficient for slide or four valve engines).

Positive means shall be provided for blocking vertical and large horizontal engines, compressors and pumps during adjustments and repairs.

A safe method should be provided for turning over engines by hand.

Stationary stairs or iron ladders shall be provided for access to such emergency valves as cannot be operated from the floor or other accessible places.

Platforms and walks on engines shall have standard railings and toe boards as specified in Safety Standards, Vol. I, No. 2. This applies also to the engine bed alongside of the connecting rod or cross-head, when it is used as a foot-walk.

Provisions should be made where practicable for oiling all engine bearings, journals, eccentrics, crank pins, etc., from outside the guard railings. All power transmission equipment should be given careful and thorough inspection at frequent and regular intervals and complete records kept of such inspections.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Vol. I No. 4

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

MACHINE TOOLS

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

MACHINE TOOL SAFEGUARDS

V-1.70 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—Unless otherwise provided for by regulations approved by the Industrial Board, all lathes, planers, milling machines, boring mills, metal saws, keyseating machines, shapers, slotters, gear cutters, drill presses and all other machine tools have all gears, sprockets, chains, bands, belts, pulleys, clutches, wheels, shafting, spindles, couplings, clutches, counterweights, revolving and reciprocating parts and all other hazardous points, parts or projections guarded as specified in Safety Standards, Volume I, No. 1.

V-1.711 The use of safety dogs is strongly recommended. Set screws and bolt heads shall be made flush or shall be guarded.

V-1.712 In new installation each face plate, chuck and collet shall be cylindrical with no projecting parts on the rim or the periphery.

Face plates, chucks and collets now in use having projecting parts on the rim or the periphery shall be encased and guarded with hinged or other effective guards.

V-1.713 The use of drills on dead centers, unless securely fastened there, should not be permitted.

V-1.74 Cams and other automatic parts shall be carefully guarded.

V-1.75 On hollow spindle lathes bar stocks should be guarded full length.

V-1.716 Chip guards shall be provided on lathes and other machines for the protection of nearby persons as well as the operator, where there is an eye hazard by reason of flying chips or cuttings. Goggles will be considered adequate protection for the operator.

Eye protection in all lathe, machine and grinding work shall be carefully considered.

V-1.77 All openings in bed frames shall be covered with sheet metal, expanded metal or wire mesh aprons, securely fastened in place. All openings in housings shall be filled or guarded.

Not less than 24 inches clearance shall be provided at both ends and sides of planers for the planer bed, the work being machined and its chucking. If the clearance is less than 24 inches, the clearance space shall be guarded with standard railings as specified in Safety Standards, Volume I, No. 2.

Floor openings and pits shall be guarded with standard railings and toe boards as specified in Safety Standards, Volume I, No. 2.

Attention is called to the hazard attending the practice of reversing a planing table by hand, except when absolutely necessary in setting up work.

Counterweights shall be placed in wells or securely guarded for their entire travel.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
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Vol. I No. 5

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

FORGING AND STAMPING

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

FORGING, STAMPING AND SHEARING MACHINERY GUARDS

V-1.40 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—Unless otherwise provided for by regulations approved by the Industrial Board, all forging, pressing, forming and stamping machines, shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gears and belts guarded as specified in Safety Standards, Volume I, No. 1.

(a) Locking devices shall be provided for presses and shears to prevent the machines coming into action prematurely or while the tools are being set. Where tight and loose pulleys are used, the locking device may be applied to the same instead of to the machine. Where direct motor-drive is used the switch shall be secured in an open position.

(b) A positive guard, which is controlled by the moving ram is recommended for blanking, drawing and forming presses operating on cold material. The guard should be arranged to throw the operator's hands away from the danger zone.

(c) Sheet metal presses for stamping, blanking, forming, trimming, shearing and punching should, where the nature of the work permits, have an inclined bed or have an automatic or roll feed.

(d) If neither false fingers, sliding dies, double trips, soft metal plyers nor work holders, using compressed air or suction for handling material operated on, are used, then guards of metal strips, metal netting or plate glass to protect the operator are recommended; these guards shall be either fixed or automatic.

(e) A positive disengaging device for clutches is recommended.

V-1.403

(a) All hammers operated by steam, air, gravity or electricity, shall be provided with positive locking devices so that when the ram is at the top or the bottom of its stroke, it cannot be accidentally moved.

(b) Every steam and air hammer shall be provided with a stop valve in the admission pipe line, which must be closed, preparatory to, and during the repair of the hammer or while changing dies.

(c) Extreme care shall be taken in making and using hammer die keys on all power hammers to see that they are not only of suitable material, but that they are driven into place with a view to the safety of the operator and of the neighboring workmen.

(d) It is suggested that hammer die keys be made of open hearth material (Mn 40 to 50%; C 50 to 60%); that they be machined accurately to fit notches; and, that the ends be tempered to prevent spreading, upsetting or breaking. The ends of keys shall be redressed when necessary.

JOHN PRICE JACKSON, Chairman,
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JAMES C. CRONIN,
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Vol. I No. 6

SAFETY STANDARDS

OF THE

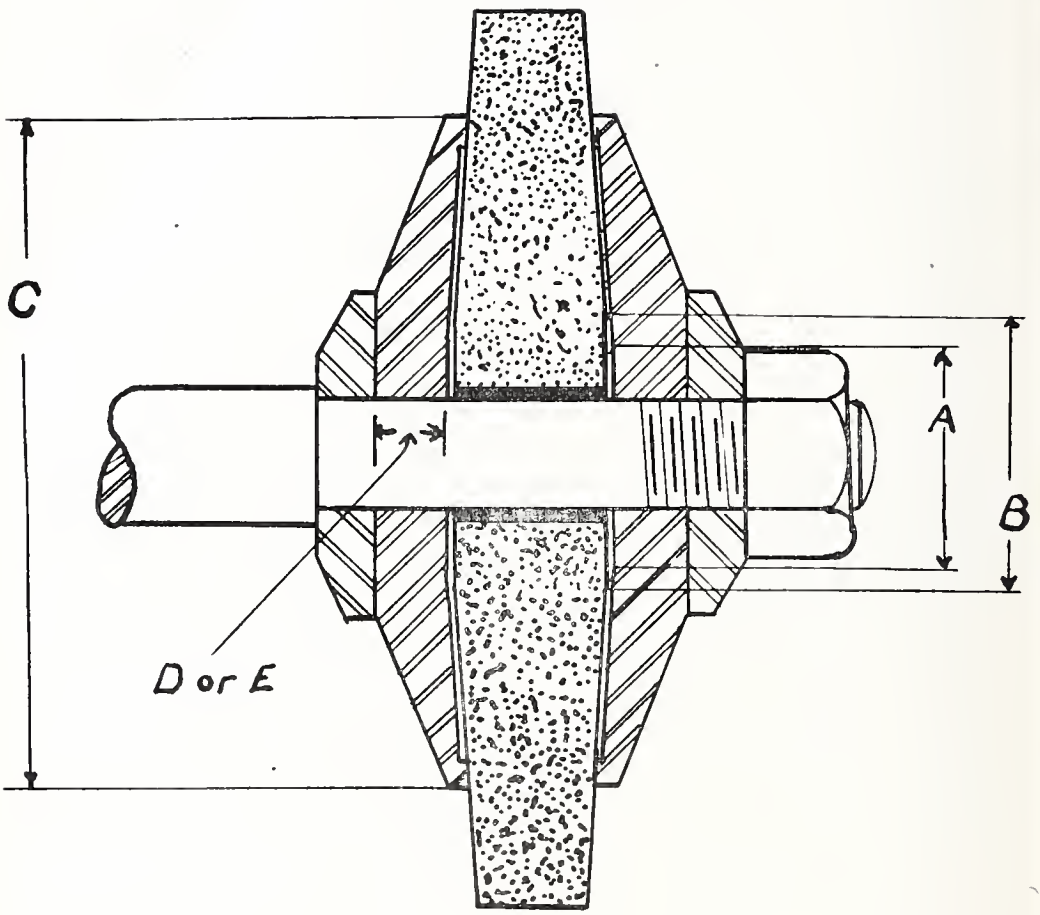
INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

POLISHING AND GRINDING

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.



Tapered Flanges for Emery Wheels

A—Maximum flat spot at centre of flange.
B—Minimum flat spot at centre of wheel.
C—Minimum diameter of flanges.
D—Minimum thickness of flange at bore for wheels 1″ or less in thickness.
E—Same as D but for wheels over 1″ in thickness.

SAFEGUARDS FOR GRINDING AND POLISHING MACHINERY

V-1.80 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—Polishing and grinding machines shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gears, fly wheels and belts guarded as specified in Safety Standards, Volume I, No. 1.

Grinding wheels are to be understood as wheels composed of a practically uniform mixture of an abrasive material and a bonding cement, formed or molded into a single piece. This does not include grinding wheels of natural stone.

Polishing wheels are to be understood as wheels composed of material other than abrasive, to all or a portion of whose surface an abrasive material is applied.

Disc grinders having discs of steel, iron or equally strong material are classed as polishing wheels with respect to safety of operation.

GRINDING WHEELS:

(a) The use of defective grinding wheels is prohibited.

(b) Grinding wheels shall fit freely on their spindles. They should never be forced on, nor should they be too loose. A clearance of .005 of an inch is recommended.

(c) The soft metal bushings at the centers shall not extend beyond the sides of the wheels. Wheels shall be kept as true as practicable and work rests shall be kept adjusted close to wheels.

(d) Wherever possible a compressible medium, such as blotting paper, rubber, lead, etc., at least as large in diameter as that of the flanges, shall be fitted between a wheel and each of its flanges.

FLANGES FOR GRINDING WHEELS:

(e) Each flange whether straight or tapered must be relieved or recessed at the centre at least 1-16 inch on the side next to the wheel for a distance as provided in Table B.

(f) The maximum and minimum dimensions of flanges and the minimum diameter of the flat spot at centre of wheel, as given in Tables A and B must be observed.

TABLE A

TAPERED FLANGES AND TAPERED WHEELS

Diameter of Wheel.	A. Maximum.	B. Minimum.	C. Minimum	D. Minimum.	E. Minimum.
	inches.	inches.	inches.	inches.	inches.
6,	0	1	3	.....	.....
8,	0	1	5	.....	.....
10,	0	2	6	.....	
12,	4	4½	6	.....	
14,	4	4½	8	.....	
16,	4	5	10	.....	
18,	4	5	12	.....	
20,	4	5	14	.....	
22,	4	5	16	.....	
24,	4	5	18	.....	
26,	4	5	20	.....	
28,	4	5	22	.....	
30,	4	5	24	.....	

TABLE B

STRAIGHT FLANGES AND STRAIGHT WHEELS

Diameter of Wheel.	Minimum outside Diam. of flanges.	Diameter of recess.	Minimum thickness of flange at bore.
	inches.	inches.	inches.
6,	2	1	
8,	3	2	
10,	3½	2¼	
12,	4	2¾	
14,	4½	3	
16,	5½	3¼	
18,	6	4	
20,	7	4½	
22,	7½	5	
24,	8	5½	
26,	8½	6	
28,	10	7	
30,	10	7	

(g) Flanges shall be made of steel or other equally strong material.

(h) Both flanges in contact with a wheel shall be of the same diameter.

(i) New installation having tapered flanges shall have a taper of not less than $\frac{3}{8}$ of an inch (preferably $\frac{3}{4}$ of an inch) to the foot on each flange, and where a flat spot is used it shall conform to dimensions set forth in the above table. But one taper shall be used in any one establishment.

(j) If but one tapered flange is used, the taper shall be not less than $1\frac{1}{2}$ inches to the foot.

(k) Wherever possible only 2 inches of the wheel should project beyond the flanges where the wheel is over 10 inches in diameter.

(l) All grinding wheels shall conform to the dimensions for flanges as set forth in the above table.

(m) The surface of wheels in contact with straight or tapered flanges, the surface of flanges in contact with wheels, and the compressible material between flanges and wheels shall be clean, smooth and free from foreign material.

PROTECTION FOR GRINDING WHEELS:

(n) Either substantial hoods, tapered flanges or both, sufficiently strong to retain the pieces of a wheel in case of breakage and so designed as to leave exposed the least portion of the wheel compatible with the work in hand shall be fitted to all grinding machines.

PRECISION GRINDING MACHINES:

(o) Precision and tool grinding machines shall be thoroughly guarded where possible. Proper clamping devices and hoods shall be applied to precision grinding machines where the diameter of the hole in the wheel will not permit the application of the specifications for guards elsewhere set forth in these standards.

CUP AND CYLINDER GRINDING WHEELS:

(p) Cup and cylinder wheels shall be surrounded, as much as operating conditions will allow, either by a substantial hood or be retained by a chuck which surrounds the periphery at least $\frac{3}{4}$ of the height of the rim of the wheel.

(q) All specially shaped wheels shall be substantially guarded.

ARBORS, FIXED COLLARS AND FLOOR, BENCH AND SWINGING GRINDING MACHINES:

(r) The protruding end of the arbor and its nut shall be guarded.

(s) Arbor bearings shall be of ample size and shall be kept carefully adjusted and lubricated.

(t) Arbors of floor, bench and swing frame grinding machines for wheels 12 inches or more in diameter, shall have fixed collars not less than $\frac{1}{3}$ of the diameter of the wheel being used.

(u) Floor and bench grinding machines shall be rigidly constructed and securely fastened to a suitable foundation.

(v) Grinding wheel manufacturers shall furnish information regarding speeds at which wheels are recommended to operate safely.

(w) Wheels must not be operated at a speed in excess of that which is recommended by the manufacturer.

EYE PROTECTION:

(x) Approved eye protection shall be provided for operators on grinding wheels if the operation involves the possibility of eye injury.

V-.02 BLOWERS AND EXHAUSTERS: For use with grinding and polishing machinery.

Note:—All blowers and exhausters shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gears, fly wheels and belts guarded as specified in Safety Standard in Volume I, No. 1.

SUCTION TEST:

(aa) Sufficient suction head shall be maintained in each branch pipe within 15″ of the hoods to displace a minimum of

two inches of water column in a "U"-shaped tube. Pressure shall be taken by pressing a tube attachment over a small opening through the pipe, which is commonly called the static method. Tests shall be made with all branches open and unobstructed.

PIPING:

(bb) Round pipe shall be used for all main ducts and branch connections unless some other form is specifically approved by the Commissioner of Labor and Industry. All branch pipes must enter the main trunk pipe at an angle of 45 degrees or less. All bends, turns or elbows in such pipes must be made with easy, smooth surfaces having a radius in the throat of not less than two diameters of the pipe on which they are connected. No branch pipe shall extend into the main duct and all laps shall be made in the direction of air flow.

(cc) Emery wheel and buffing wheel exhaust systems shall be kept separate owing to danger of sparks from the former setting fire to the lint dust from the latter, if both are drawn into the same suction main.

(dd) The inlet of the exhauster shall be at least 20% greater in area than the combined areas of the several connections to the hoods, and this increase in the main pipe shall be carried proportionately throughout the entire trunk line. The piping on the outlet of the fan is also to be at least 20% greater than the combined areas of the several connections to the hoods.

(ee) The area of the main duct at any point should be equal as nearly as possible to the combined areas of all branch pipes to that point, plus the necessary 20% excess area. In general not more than two branches should be connected to a section of uniform diameter in the main duct.

(ff) The use of screens across the mouths of branch pipes is prohibited.

(gg) The withdrawal of air from a room by an exhaust system tends to create a vacuum and for this reason sufficient inlets for air shall be left open.

(hh) The main trunk lines shall be provided with suitable cleanouts not over 10 feet apart and the end of the main trunk line shall be blanked off with a removable cap placed on the end.

(ii) The sizes of the branch pipes leading to the hoods for polishing and grinding wheels shall be as follows:

DIAMETER OF WHEELS	DIAMETER OF BRANCH PIPE
From 6″ up to and including 16″	4″
More than 16″ up to and including 24″	5″
More than 24″ up to and including 30″	6″

For rag wheels the following dimensions shall be used:

DIAMETER OF WHEELS	DIAMETER OF BRANCH PIPE
Up to and including 6″	3″
More than 6″ up to and including 12″	4″
More than 12″ up to and including 16″	4½″
More than 16″ up to and including 24″	5″
More than 24″ up to and including 30″	6″

PLANS:

(jj) Plans for all blower installation should be submitted to the Department of Labor and Industry in duplicate for approval before work is commenced and it should be clearly specified that the system is to be installed in strict accordance with the above regulations.

(kk) The plans should show the diameter of all wheels, dimensions of all piping, and should also show the general construction of the hoods to be used. The regulations as set forth above must be complied with before the system will be acceptable to the Department of Labor and Industry.

Note:—The above regulations shall not apply to grinding machines upon which water is used at the point of the grinding contact nor shall they apply to any factory or workshop where men are not employed continuously at such wheels or belts more than three hours in twenty-four.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
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Industrial Board.

Vol. I No. 7

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF LABOR
AND INDUSTRY

COMPRESSED AIR APPARATUS

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

SAFEGUARDS FOR PNEUMATIC APPLIANCES

V-1.611 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—All air compression machinery shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gears, fly wheels and belts guarded as specified in Safety Standards, Volume I, No. 1. All air compressors shall have fly wheels, tail rods, cranks and other dangerous moving parts guarded as specified in Safety Standards, Volume I, No. 2.

V-1.6112 PNEUMATIC HAMMERS:

In new installation each pneumatic hammer shall be fitted with a device to prevent the piston from leaving the cylinder.

V-1.6113 PORTABLE PNEUMATIC DRILLS:

In new installation each portable pneumatic drill and pneumatic wood boring machine shall be provided with an automatic device to stop the machine and prevent accidental starting when the operator's hand is removed from the controlling valve.

V-1.6116 PIPE CONNECTIONS FOR COMPRESSED AIR:

A straightway valve shall be used in new installation where a valve is required in a pipe line between a compressor and its air tank.

Where a stop valve is placed in the discharge line between a compressor and an air tank a spring pop safety valve shall be placed between the compressor and such stop valve.

V-1.6114 AIR TANKS:

A drain cock shall be fitted at the lowest part of each air tank and the accumulated oil and water shall be frequently withdrawn.

The design and construction of air tanks shall conform to specifications approved by the Department of Labor and Industry.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Vol. I No. 8

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF LABOR
AND INDUSTRY

WOOD WORKING MACHINERY

OPERATIVE ON AND AFTER FEBRUARY 1, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

SAFEGUARDS FOR WOOD WORKING MACHINERY

III-8.0 The word "SHALL" where used is to be understood as mandatory and "SHOULD" as advisory.

Note:—All moving parts of woodworking machinery such as saws, feed-rolls and cutting heads shall be guarded in a manner to remove all hazards and shall have all exposed collars, set screws, shafts, couplings, clutches, keys, pulleys, gears and belts guarded as specified in Safety Standards, Volume 1, No. 1.
Where special operations require the removal of the various sawguards mentioned below, an equally safe special guard must be substituted and the saw must always be guarded by one or the other while in motion.

III-8.11 CIRCULAR RIP SAWS:
Each circular rip saw shall be guarded by a hood and provided with a spreader located at the rear of the saw. Saws shall be guarded under the table to prevent possible personal contact. An exhaust will be considered an under guard.

III-8.12 CIRCULAR CROSS-CUT SAWS:
Circular cross-cut saws having fixed horizontal bearings shall be guarded by hoods. Swinging cross-cut saws shall have the saws guarded in an approved manner. All circular cross-cut saws shall be guarded under or at the rear of the table. Knuckle guards shall be attached to the swing frame. A swing cut-off shall be equipped with an effective device to return and retain saw at the back of the table.

III-8.13 CIRCULAR SAW MILLS:
In setting saw mills, a horizontal clearance of at least 3 feet shall be allowed between any fixed object not required in the mill and any part of the traveling mechanism.

III-8.2 BAND SAWS:
Band saws shall have both wheels encased and be provided with a shield extending down to the guide rolls to pre-

vent the operator from coming in contact with the saw. A band saw blade shall be completely guarded on its up travel.

III-8.3 WOOD SHAPERS:

Wood shapers shall have the cutting heads carefully guarded. It is recommended that shapers be provided with a cylindrical collar having rounded corners, of a diameter not less than the greatest diameter of the cutter and placed immediately above the cutter, when the work operated on permits. The collar specified may have several $\frac{3}{8}$ inch diameter perforations to permit a view of the work.

III-8.4 WOOD JOINTERS:

Wood jointers shall be provided with a cylindrical cutter head and an automatically adjusted guard.

III-8.5 MORTISING MACHINES:

Mortising machines shall be provided with thumb stops to prevent the hands of the operator from coming in contact with the chisel.

III-8.6 PLANING, MATCHING AND MOLDING MACHINES.

See Note under III-8.0.

III-8.7 SANDING MACHINES:

Disc sanders shall have the periphery and the back of the revolving head thoroughly guarded and an approved exhaust system provided for the removal of dust.

III-8.8 TENONING MACHINES:

Cutting heads, saw if used, and all exposed moving parts shall be carefully guarded.

Pneumatic wood boring machines shall be guarded as specified in Safety Standards, Volume I, No. 7.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

Vol. I No. 9

SAFETY STANDARDS

OF THE

INDUSTRIAL BOARD

PENNSYLVANIA DEPARTMENT OF
LABOR AND INDUSTRY

BAKESHOPS

OPERATIVE ON AND AFTER FEBRUARY 15, 1915

The following safety standards have been adopted by the Industrial Board, subject to the provisions of the Law (Act 267, section 15, P. L. 1913) which provides that persons affected may petition the Board for changes in the regulations. Upon the receipt of such petition, it will be reviewed by the Board and if considered necessary a public hearing will be called in regard thereto.

BAKESHOPS

NOTE: The word "Bakeshop" as herein used shall mean any place used for the purpose of making, preparing, or baking bread, biscuits, pastry, cakes, doughnuts, crullers, pretzels, noodles, macaroni or spaghetti to be sold on or off of the premises.

PLACE:

Any person, firm or corporation owning or holding a building intended for use as a bakeshop shall communicate with the Department of Labor and Industry and shall demonstrate to the satisfaction of that Department, through the submission of plans and other information, that the premises in question are properly suited to such purpose. The opening of bakeshops in cellars at locations not so occupied before is forbidden after February fifteenth, 1915. If at any time hereafter it becomes necessary for the Department to close any bakeshop now in operation in a cellar, such premises may not be reopened for bakeshop purposes.

The following definitions of "cellar" and "basement" shall apply to above section.

Sections 16 and 17 of Act 428, approved July 22, 1913:

A "cellar" is a story more than one-half below the level of the ground surrounding the building.

A "basement" is a story partly but not more than one-half, below the level of the ground surrounding the building, and shall be considered the first story of such building.

All bakeshops newly opened after February 15, 1915 must have a height of at least nine feet and windows half or more above ground. After January 15, 1916 no bakeshops of less than seven feet in height shall be permitted.

Permission to use the kitchen of a private house as a bakeshop may be granted when the conditions laid down by the Department are met.

OPERATION:

Any person, firm, or corporation intending to engage in the baking business shall communicate with the Department of Labor and Industry and shall demonstrate to the satisfaction of that Department that the proposed plant and its preparation for operation, including distribution, conform to the rules and regulations issued by the Department for the governance of such business. If such conditions have been met, the Department shall authorize the operation of said plant by a certificate of permission, to cover a period of six months. If, at the end of that time, the plant has been actually operated in accordance with such regulations, the Department shall issue a certificate of approval, good for one year only and revocable at any time for failure to obey said regulations.

No person, firm, or corporation shall open a bakery without first obtaining a certificate of permission from the Department of Labor and Industry. This permit shall specify the place in which business is authorized to be carried on.

When any of the provisions contained herein are not being complied with in any bakeshop, the Department of Labor and Industry or its deputy shall issue to the person in charge, or his representative, a written order to comply with the said regulations, within ten days; or he may order the closing of any such bakeshop until the order shall have been complied with, should the safety of the employees or the public, in his opinion, so require.

SANITATION:

All rooms where baked goods are manufactured, stored, or offered for sale, or where the materials for such goods are stored, shall be separate and apart from any sleeping room and shall not be used as sleeping, or lounging places. Such rooms shall not communicate directly with any water-closet, stable, stable-yard, or other place of possible contamination. This shall not apply to wagon sheds or general yards, provided they are kept free from offal. Such rooms shall be drained and plumbed in a sanitary manner. They shall be properly ventilated, in accordance with the requirements of the Department; and shall have sufficient light to prevent the neces-

sity of any place being operated entirely by artificial light. Windows shall open easily. Those of the one sash variety used in the basements shall be hung on hinges or pivots. Doors shall be faced with metal, extending at least six inches from bottom on the outside, where necessary to prevent the entrance of rodents. All water-closets shall be vestibuled and permanently screened, and such rooms shall also contain wash-bowls conveniently placed. Plain notices requiring the use of same upon leaving the toilet shall be posted. All baking, mixing, storing and sales rooms shall be thoroughly screened between April first and November first. The screening of shipping departments where baked goods are handled in packages shall be arranged in consultation with the representative of the Department.

The floors, walls and ceilings of all baking, mixing, storing and sales rooms shall be tightly joined and free from unevenness and crevices. The walls and ceilings shall not be covered with paper, nor with any substance that requires paste or glue, or that cannot be thoroughly cleaned. Walls, ceilings and floors shall be kept in a clean and sanitary condition at all times. Damp sweeping, damp dusting and frequent scrubbing and washing with proper cleansing and disinfecting solutions shall be demonstrated to the satisfaction of the inspector. The Department of Labor and Industry shall have power to order that any room be cleaned in such manner as it may direct.

All domestic animals and pets shall be excluded.

Kitchen bakeshops shall conform in general to the regulations outlined above. Walls and ceilings shall not be papered; floors shall not be carpeted. No arrangements for sleeping in the kitchen shall be allowed; and no laundry work of any kind shall be done there.

PERSONAL SANITATION:

No person suffering from a communicable disease shall be employed. Persons working in bakeshops shall be subject to medical inspection under the supervision of the Department of Labor and Industry. Outer clothing used by bakeshop workers when on duty shall be of washable material (preferably

white) and shall be kept clean at all times. The smoking, snuffing, or chewing of tobacco or snuff, the scraping of hands and arms with a knife to remove the dough, the open blowing of the nose, expectoration, wetting the finger in the mouth and all other insanitary personal practices are forbidden and plain notices to this effect shall be conspicuously posted.

DRESSING ROOMS:

Dressing rooms shall be provided separate and apart from all work rooms, or rooms where materials are stored and apart from all water-closets. The hanging of unused clothing in either bakeshops or store rooms is prohibited. Lockers hereafter installed shall be fireproof and sanitary. Proper washing facilities, including hot water, clean towels and soap shall be provided; also an abundance of clean, pure and cool drinking water.

UTENSILS:

Stoves shall be connected by a pipe to the flue and must be placed upon fire proof material. Ovens and stoves shall be so ventilated as to carry off fumes to the outer air. Ash receptacles shall be of fire proof construction and no ashes shall be sifted in the bakeshop. Sinks large enough to permit the washing of trays, pans, bowls and other utensils shall be provided in all bakeshops. They shall not be of wood and the wall around them shall be finished with a water-proof substance, that it may be properly cleaned. Sinks shall not be used as cuspidors or urinals. Moulding peels shall not be laid on the floor. Clean and sanitary paper shall be used for all bakeshop purposes; all utensils including cloths, must be kept clean and sanitary.

SAFETY:

All buildings occupied as bakeshops shall conform to the building and fire risk requirements of the state and city. Skylights, floor openings, hoists, stairs, elevators and other special features of the building; boilers, engines and electrical equipment; power transmission appliances, power working machines, roller-fed machines and machines having cutting, shearing,

pressing or squeezing action, shall be located, operated, guarded and maintained in accordance with standards approved by the Department of Labor and Industry.

SUPPLIES:

Flour and other supplies shall be kept in closed containers and in a sanitary manner.

DISTRIBUTION:

Baked goods stored, or on display in sales rooms shall be protected from flies, dust and dirt. All trays, containers, baskets, hampers and vehicles used in the handling and distribution of baked goods shall be kept clean and sanitary at all times and shall be covered so as to exclude flies, dust or other sources of contamination. Drivers shall not sleep in vehicles used for the distribution of bread or other bakeshop products. All yards, entrances and vehicles shall be inspected and shall conform to the standards established for the whole business.

JOHN PRICE JACKSON, Chairman,
GEORGE S. COMSTOCK,
JAMES C. CRONIN,
JOHN P. WOOD,
MRS. SAMUEL SEMPLE,
Industrial Board.

SUGGESTED RULES AND REGULATIONS FOR THE ERECTION, CONSTRUCTION, ALTERATION, REPAIR AND OPERATION OF MOVING PICTURE THEATRES IN THE STATE OF PENNSYLVANIA.

These suggested rules and regulations were compiled by a representative committee appointed by the Industrial Board and were adopted as *recommendations* by the Industrial Board for the guidance of those operating, constructing or repairing motion picture establishments. It is desirable that these recommendations be complied with, owing to the great panic hazard in these places of amusement.

ARTICLE 1.

Section 1. Every Motion Picture Theatre hereafter erected, constructed or altered, and all buildings hereafter erected or converted for the purposes of a Motion Picture Theatre, shall conform to the following specifications recommended by the Industrial Board.

Section 2. (a) Before work is commenced on the erection, construction, alteration or conversion of any building, designed or intended to be used as a Motion Picture Theatre, the owner thereof shall submit to the Department of Labor and Industry at Harrisburg, two (2) complete sets of plans from architects' drawings, and such plans shall be approved by the Department of Labor and Industry before such work shall be commenced. Where all information as to the character of the work and materials is not indicated on the plans, separate specifications shall accompany the plans. All plans not accompanied by details drawn to a scale of at least three-eighths ($\frac{3}{8}$) shall be drawn to a scale of at least one-eighth ($\frac{1}{8}$) of an inch, and show accurately and clearly the location and dimensions of the building and of the lot upon which it is situated, and the location and dimensions of all the exits, aisles, passageways and standing space; the length and width of each part of the building; all elevations showing inclines and floor pitch; the arrangement of the seats, showing the number of rows and the number of seats in a row, together with the dimensions of the seats and the distance between rows; also the dimensions of floor beams and wall supports. All radiators and projections on side walls shall be clearly indicated, and also the location and construction of the heating plant, motion picture machine booth, lighting apparatus and electric wiring, and all fire equipment.

(b) Specifications shall clearly indicate the manner in which the work is to be executed, and the kind and quality of materials to be used.

Section 3. (a) Any Motion Picture Theatre that may hereafter be damaged by fire or other causes, including ordinary wear, so that at any time its value be less than one-half ($\frac{1}{2}$) its original value, exclusive of the value of the foundations, shall not be repaired or rebuilt except in conformity with the requirements for Motion Picture Theatres hereafter erected.

(b) Before any repairs are made, the approval of the Department of Labor and Industry at Harrisburg shall first be obtained, unless such repairs are necessary and occasioned by ordinary wear and do not involve the cutting away of any wall or changing the location of, or obstructing any exit, aisle or passageway or a rearrangement of the seats.

Section 4. When any Motion Picture Theatre has been completed and ready for occupancy, before it is opened to the public, the owner, lessee or proprietor must first receive a permit from the Department of Labor and Industry.

ARTICLE II.

Special Requirements for Motion Picture Theatres Hereafter Erected, Converted or Altered.

Section 5. All Motion Picture Theatres hereafter erected, converted or altered, shall be so designed and constructed that the floors shall safely sustain, in addition to the weight of the floor construction, partitions, permanent fixtures and mechanisms that may be set upon them, a live load of not less than one hundred (100) pounds on every square foot of surface; and the stairs and stairways, a live load of not less than one hundred and fifty (150) pounds on every square foot of treads and landings.

Section 6. (a) All means of egress from any Motion Picture Theatre hereafter erected, converted or altered, shall be by doors which shall easily open outward by hand pressure.

(b) Two (2) front doors only, which are not used as emergency exits, may be locked except during the time the building is occupied by the public.

All other doors shall not be provided with any form of lock or locking mechanism other than a removable bar at least six (6) inches wide and one and one-quarter ($1\frac{1}{4}$) inches thick. This bar shall be located five (5) feet from the floor, and shall be supported on the door and door frame by "L"-shaped castings or forgings in such a manner that, to unlock the door, the bar must be lifted upwards to disengage it from the supports. No other form of supports will be permitted.

(c) About the middle of each bar, there shall be painted on each side the words "CLOSED", "UNLAWFUL". These words "CLOSED", "UNLAWFUL," shall be visible when the door is barred no matter which side of the bar is placed outward. The words "OPEN", "PUSH" shall be painted on each exit door in such a manner as to be covered by the bar when the door is barred, and to be exposed to the view of the audience when the door is unbarred. The lettering shall be at least five (5) inches in height.

(d) Such doors may be provided with springs or light devices, not locks, to hold the doors in a closed position, and shall at all times permit the door to yield to slight hand pressure. Such devices shall be of approved design. Substitutes, equivalents or modifications of this method of locking the doors will not be used.

(e) All exit doors opening to outside of building shall be unlocked and unbarred during the entire time that the Motion Picture Theatre is occupied by the public.

Section 7. (a) In every Motion Picture Theatre hereafter erected, converted or altered, no wall projection, radiator or other obstruction of any kind shall be placed in any aisle, corridor, hallway, passageway or exit. No person, except the necessary attendants, shall be allowed to stand in or occupy any aisle, corridor, hallway, passageway or exit while such building is open to the public; but a space may be reserved back of the last row of seats in which not more than twenty (20) per cent of the total seating capacity will be permitted to stand; provided that, there shall be at least three (3) square feet of floor area for each person standing. Such space, however, shall be separated from main aisles by approved railings, and shall be directly accessible to at least two nearby exits.

(b) There shall be placards posted in at least two (2) conspicuous places in such Motion Picture Theatre, stating the exact number of seats permitted, and the exact number of persons permitted to stand. Such placard shall be signed by the Department of Labor and Industry.

Section 8. (a) All Motion Picture Theatres hereafter erected, converted or altered, shall be ventilated by an approved mechanical system which will supply not less than one thousand five hundred (1,500) cubic feet of fresh air per hour to each person designed to be accommodated.

(b) The number, size and location of the air inlets and discharging ducts shall be such as to distribute the incoming air and remove the vitiated air evenly without exposing any person to direct draft.

(c) The fresh air supply shall be taken from outside the building, and no vitiated air, or air from basements, cellars or other rooms shall be used for ventilating purposes, and such air shall be filtered when so ordered by the proper State Officials.

(d) All such buildings shall be thoroughly ventilated immediately before and immediately after each occupation, and the ventilating system shall be kept in constant operation during the occupation.

(e) All blowers used to distribute air through ventilating pipes, ducts or flues shall be electrically operated, and shall be provided with fusible links to stop the blowers automatically in case of fire. Such fusible links shall be connected with an automatic cut-out at the motor, and shall be located in the motion picture machine booth.

(f) Dampers shall be provided at the intake of all ventilating pipes, ducts or flues, and shall be held open by a combustible cord.

(g) Exhausted or vitiated air shall be carried to a point at least two (2) feet above the roof.

Section 9. (a) All Motion Picture Theatres hereafter erected, converted or altered, accommodating, or designed or intended to accommodate, five hundred (500) or more persons, shall be of fire-proof construction.

(b) Such Motion Picture Theatres accommodating, or designed or intended to accommodate, less than five hundred (500) persons, shall have the exterior walls constructed of brick, stone or concrete of approved thickness. The roof may have wood sheathing and wood trusses. In such cases there shall be a ceiling covered in an approved manner with wire lath and plastered with cement plaster at least one (1) inch thick. The floor covering or flooring shall be of approved fire-resisting materials. Internal partitions or structures of wood or other materials not approved fire-resisting materials are prohibited.

Section 10. (a) Motion Picture Theatres hereafter erected, when located in towns of five thousand (5,000) or less population, accommodating, or designed or intended to accommodate, two hundred and fifty (250) or less persons, may be of frame construction; provided that, they are located on a street in the front and a street or public or private alley in the rear, or on a street in the front and on a lot which is open so that there is no other building within twenty-five (25) feet of such Motion Picture Theatre in any direction, which space shall be permanently maintained.

(b) When such Motion Picture Theatre abuts on a street or alley in the rear, there shall be open space on each side of the building of not less than twenty-five (25) feet, which space shall be permanently maintained.

(c) When such Motion Picture Theatre abuts on a street at the front and a street or alley at the rear, there shall be a paved walk of at least five (5) feet in width extending along each side of the building from the street in the front to the street or alley in the rear. When there is no street or alley in the rear, the two walks at the side shall be connected across the rear by a walk of the same width.

(d) In such Motion Picture Theatres there shall be at least two (2) exit openings at the street front, each of a width of not less than five (5) feet in the clear; and there shall be at least one (1) exit opening through the rear wall of a width of not less than five (5) feet in the clear. In addition to these exits there shall be one exit opening in each side of the building, located at a point midway between the first and last row of seats, to be of a width of not less than five (5) feet in the clear. Such side exits shall be located directly opposite each other, and there shall be a cross aisle extending across the entire width of the auditorium connecting these two side exits.

(e) Such Motion Picture Theatre shall be not more than one (1) story in height, and no part of such building shall be used for any purposes other than that of a Motion Picture Theatre.

Section 11. (a) All Motion Picture Theatres hereafter erected, converted or altered, of fire-proof construction, may be more than one (1) story in height. Such Motion Picture Theatres of other than fire-proof construction, shall be not more than one (1) story in height.

(b) The least height between the floor covering or flooring and the ceiling in all such Motion Picture Theatres, accommodating, or designed or intended to accommodate, less than three hundred (300) persons, shall be fourteen (14) feet. Where such Motion Picture Theatres accommodate, or are designed or intended to accommodate, three hundred (300) or more persons, and less than five hundred (500) persons, the least height between the floor covering or flooring and the ceiling shall be sixteen (16) feet. Where such Motion Picture Theatres accommodate, or are designed or intended to accommodate, five hundred (500) or more persons, the least height between the floor covering or flooring and the ceiling shall be eighteen (18) feet.

Section 12. (a) Motion Picture Theatres hereafter erected, converted or altered, and which accommodate, or are designed or intended to accommodate, more than two hundred and fifty (250) persons, shall not be erected, converted or altered on a lot less than twenty-five (25) feet in width, and in all cases the length of the building shall be not more than four (4) times the width.

(b) Such Motion Picture Theatres accommodating, or designed or intended to accommodate, not more than two hundred and fifty (250) persons, may be situated on a lot not less than twenty (20) feet in width; but the depth of such building should never be more than one hundred (100) feet.

Section 13. (a) If any Motion Picture Theatre hereafter erected, converted or altered, is built so as to form part of any other building, then the entire building shall be of fire-proof construction.

(b) Wherever any such building is built so that any of its walls or any part of its walls are common walls, then such common walls shall be unpierced fire walls.

Section 14. (a) Motion Picture Theatres hereafter erected, converted or altered, may be located in buildings of fire-proof construction that are used for other purposes; provided that, no halls or rooms used as places of assembly, hazardous occupations or businesses handling or dealing in materials of easily inflammable or combustible nature, shall be permitted in such buildings.

(b) In all such cases there shall be separate exits to the street, and all parts of the building used for the purpose of a Motion Picture Theatre shall be separated from the rest of the building by unpierced fire walls of approved thickness.

(c) Structures built over the ceiling or roof of any Motion Picture theatre shall be of fire-proof construction.

Section 15. (a) Motion Picture Theatres hereafter erected, converted or altered, shall have a frontage upon at least one (1) street.

(b) Such Motion Picture Theatres accommodating, or designed or intended to accommodate, less than five hundred (500) persons, shall either have courts as recommmended for Motion Picture Theatres accommodating, or designed or intended to accommodate, five hundred (500) or more persons; or, in lieu thereof, they shall be located upon a lot abutting on either two (2) streets, or a street and a public alley at least ten (10) feet wide.

(c) Except as hereinafter provided, such Motion Picture Theatres accommodating, or designed or intended to accommodate more than five hundred (500) persons, shall have on each side of the auditorium a court extending from the street to the street or public alley in the rear, if there be such. Where there is no street or public alley in the rear, such courts shall extend to at least five (5) feet beyond the rear wall of the building, and there shall be a court in the rear connecting the two (2) side courts. Where less than one thousand (1,000) persons are accommodated, or designed or intended to be accommodated, the side and rear courts shall be not less than five (5) feet wide. Where one thousand (1,000) or more persons are accommodated, or designed or intended to be accommodated, such courts shall be not less than seven (7) feet wide. Such courts shall be paved with concrete or other approved fire-resisting materials. Differences in level shall be overcome by inclines having a rise of not more than one (1) foot in ten (10) feet. All courts shall be unobstructed from the ground to the sky.

(d) Such Motion Picture Theatres accommodating, or designed or intended to accommodate more than five hundred (500) persons, and not more than one thousand (1,000) persons, which are located on a lot abutting on a street in the front and a street in the rear, need have a court on but one side, extending from the street in the front to the street in the rear. Such court shall be at least seven (7) feet wide.

(e) Where any such Motion Picture Theatre is located on a corner lot or at the intersection of two (2) streets, a court should be provided opposite only one (1) of such streets; provided, however, that such Motion Picture Theatre shall have a frontage on such street throughout its entire length or width, as the case may be, and that all exits shall be at the side walk level or grade, and that no run shall have a rise of more than one (1) foot in ten (10) feet. Otherwise a court should be provided on the street side where the exits are not at the sidewalk level or grade.

Section 16. In all Motion Picture Theatres hereafter erected, converted or altered, the level of the front entrance at the sidewalk shall be not higher than eight (8) inches above the level of the sidewalk.

Section 17. (a) In all Motion Picture Theatres hereafter erected, converted or altered, accommodating, or designed or intended to accommodate, not more than five hundred (500) persons, the front or that side having the principal entrance shall be as wide as the widest part of the auditorium.

(b) Such Motion Picture Theatres accommodating, or designed or intended to accommodate, more than five hundred (500) persons, and abutting on a street in the front and on a street at least twenty (20) feet wide in the rear, or a public alley at least twenty (20) feet wide in the rear, will not be required to have the front or that side having the principal entrance to be as wide as the widest part of the auditorium; but a free unobstructed space shall be preserved as the principal entrance corridor between the foyer wall and the street, such space to be centrally located between the sides of the building and to be of a width not less than twenty-five (25) per cent more than the space required herein for exit openings at the front; and the depth of that part of the building in front of the foyer wall which is used for other purposes shall be not more than twenty-five (25) feet from the street front. In all such cases where such Motion Picture Theatre abuts on a street at least twenty (20) feet wide in the rear, a court should be provided on at least one (1) side; such court should be at least seven (7) feet wide and extend from street to street. Where such Motion Picture Theatre abuts on a public alley in the rear it shall have courts on both sides as herein required.

Section 18. In all Motion Picture Theatres hereafter erected, converted or altered, where the centre line of the principal entrance extended shall intersect the central axis of the auditorium at an angle other than one hundred and eighty (180) degrees, the side having such principal entrance shall have an unobstructed street frontage throughout the entire length or width of the auditorium, as the case may be, and the principal entrance corridor shall in no case be less than one-half ($\frac{1}{2}$) the width of the auditorium. Stores or obstructions of any

kind shall not occupy this entrance corridor. In all such cases, the centre line of the principal entrance corridor extended shall intersect the central axis of the auditorium back of the last row of seats, and there shall be an unobstructed passage from all exit doorways in the foyer wall to the main entrance.

Section 19. In all Motion Picture Theatres hereafter erected, converted or altered, the principal entrance corridor shall be unobstructed by booths, easels or obstructions or impediments of any kind whatever; except that, ticket booths will be permitted, provided they do not obstruct or reduce the required exit space. Pictures or lithographs may be hung on the walls of the principal entrance corridor; but the same shall not project more than six (6) inches into the corridor, and shall not project into the required width of such principal entrance corridor. In addition, unframed lithographs may be suspended from above; but the lower edges of such unframed lithographs shall not come within seven (7) feet of the floor of the principal entrance corridor.

Section 20. No Motion Picture Theatre hereafter erected, converted or altered shall contain a balcony.

Section 21. (a) No Motion Picture Theatre hereafter erected, converted or altered, should contain steps or stairways except those leading to an office room, smoking room, check room, or retiring room. Differences in level shall be overcome by inclines having a rise of not more than one (1) foot in ten (10) feet.

(b) Where steps, stairways, corridors, hallways or passageways lead into any office room, smoking room, check room or retiring room there shall be at least two (2) exit doors in such room, so arranged that one (1) shall open in the direction of the nearest exit. All such steps, stairways, corridors, hallways and passageways shall be at least four (4) feet in width throughout their entire length, and shall not be obstructed except by doors not less than three (3) feet, six (6) inches in width in the clear. Such doors shall be double swinging doors, and shall not be provided with locks or catches of any kind.

Section 22. (a) In all Motion Picture Theatres hereafter erected, converted or altered, no mirrors shall be located in the auditorium, nor shall any exceed three hundred square inches in area.

(b) In all such Motion Picture Theatres no architectural feature shall be so arranged as to give the appearance of a doorway, window, corridor, hallway or passageway where none exists.

(c) In such Motion Picture Theatres no doorway other than herein provided should be installed, from the auditorium or principal entrance corridor.

Section 23. (a) All Motion Picture Theatres hereafter erected, converted or altered, accommodating, or designed or intended to accommodate, not more than two hundred and fifty (250) persons, shall

have at least two (2) exit openings at the street front, each having a width of at least five (5) feet in the clear; and two (2) exit openings at the rear, each having a width of at least five (5) feet in the clear.

(b) All such Motion Picture Theatres accommodating, or designed or intended to accommodate, more than two hundred and fifty (250) persons, and not more than five hundred (500) persons, shall have at least three (3) exit openings at the street front, each having a width of at least five (5) feet in the clear; and two (2) exit openings in the rear, each having a width of at least six (6) feet in the clear.

(c) All such Motion Picture Theatres accommodating, or designed or intended to accommodate, more than five hundred (500) persons, shall have at least three (3) exit openings at the street front, each having a width of at least five (5) feet in the clear. In addition, the aggregate width of such exit openings shall increase in the ratio of twenty (20) inches for each one hundred (100) persons or fractional part thereof more than five hundred (500). There shall be two (2) exit openings in the rear, each having a width of at least five (5) feet in the clear.

(d) Such Motion Picture Theatres accommodating, or designed or intended to accommodate, more than five hundred (500) persons, shall have at least two (2) exit openings on each side of the auditorium directly opposite each other, each having a width of at least five (5) feet in the clear; except that, such exit openings may be omitted in that side of the auditorium not abutting on a street or court, in cases where such Motion Picture Theatres are located on a corner lot or on a lot at the intersection of two (2) streets. Such exit openings shall be located at points equally distant from the line of the first and last rows of seats. There shall be one (1) additional such exit opening on each side for each five hundred (500) persons or fractional part thereof more than one thousand (1,000).

(e) Where a court is recommended on but one side of such Motion Picture Theatres, the number of exit openings in the wall on that side of the auditorium shall be equal to the number of exit openings required in side walls of the auditorium when there are courts on both sides.

(f) Every such Motion Picture Theatre shall have at least one (1) exit opening in the rear wall on each side of the motion picture screen; except that, where this is impracticable, such exit openings may be under the picture screen at equal distances from the side walls of the auditorium.

(g) All exit openings shall have a height of at least seven (7) feet in the clear; except that, when under the picture screen they need be but six (6) feet, six (6) inches in height in the clear.

(h) All exits may be used for entrances; but the provisions of this section should be followed.

(i) There shall be exit openings in the foyer wall, and in any partition between the foyer wall and the front of the building, to correspond in number and size with the exit openings herein recommended at the street front and directly opposite such exit openings. There shall be no obstruction of any kind whatever in the line of passage between such exits.

(j) The sills of exit openings shall be flush with the approach on either side.

Section 24. In all Motion Picture Theatres hereafter erected, converted or altered, the floor level of the highest row of seats shall be not more than five (5) feet above the sidewalk level, and the floor level of the lowest row of seats shall be not more than six (6) feet below the sidewalk level. Both such levels shall be measured from the same sidewalk level.

Section 25. (a) In all Motion Picture Theatres hereafter erected, converted or altered, the unoccupied space within the auditorium, exclusive of aisles and the space reserved for standing room, shall be sufficient to contain the whole number of persons accommodated, or designed or intended to be accommodated therein, in the ratio of one and one-half ($1\frac{1}{2}$) square feet of floor area for each person; provided that, the unoccupied space in front of the first row of seats shall not be counted for more than one-half ($\frac{1}{2}$) such total required unoccupied space.

(b) The space between the back row of seats and the foyer wall, and between the space reserved for standing room and the foyer wall, shall be free and unobstructed, and shall be at least five (5) feet in width, and shall extend across the full width of the auditorium.

Section 26. (a) In all Motion Picture Theatres hereafter erected, converted or altered, there shall be at least one (1) main aisle which shall lead in a straight line to an exit at the street front. Where such main aisle has seats on both sides, it shall have a uniform width of not less than four (4) feet in the clear; where it has seats on only one (1) side, it shall have a uniform width of not less than three (3) feet, six (6) inches in the clear.

(b) In all such Motion Picture Theatres having exits in the sides of the auditorium, there shall be a cross aisle leading to every side exit; except that, where but one (1) side court is recommended, no more cross aisles need be used than when there are two (2) side courts. Where there are more than two (2) main aisles, such cross aisle shall extend the full width of the auditorium; except that, where but one (1) side court is recommended, such cross aisle need extend only to the main aisle that is farthest from such side court. Such cross aisle shall have a uniform width of not less than four (4) feet in the clear.

(c) In all such Motion Picture Theatres, accommodating, or designed or intended to accommodate, more than two hundred and fifty (250) persons, there shall be at least two (2) main aisles.

Section 27. (a) In all Motion Picture Theatres hereafter erected, converted or altered, there shall be not more than six (6) seats intervening between any one (1) seat and an aisle, nor more than thirteen (13) seats in any row between any two (2) aisles.

(b) Rows of seats shall be not less than thirty (30) inches apart, measured from back to back.

(c) All seats shall be separated by arms, and shall be not less than eighteen (18) inches in width between arms.

(d) All seats shall be securely fastened to the floor, and no swivel or revolving seats shall be permitted.

Section 28. In all Motion Picture Theatres hereafter erected, converted or altered, a platform will be permitted in lieu of a stage, of not more than eight (8) feet in depth; but no movable scenery should be employed, and a free unoccupied space of at least four (4) feet preserved between the front of the platform and the first row of seats. Such platform shall be constructed entirely of approving fire-resisting materials, except that the floor covering or flooring may be of wood not less than seven-eighths ($\frac{7}{8}$) inch thick.

Section 29. In all Motion Picture Theatres hereafter erected, converted or altered, the picture screen shall be made of approved fire-resisting materials, or of materials treated with an approved fire-proofing solution that does not destroy the effectiveness of the picture screen, and approved by the local or State Fire Marshal. Such picture screen shall be placed against the rear wall. Mirror screens will be permitted.

Section 30. (a) In every Motion Picture Theatre hereafter erected, converted or altered, all fuses and switches shall be enclosed in a box or boxes. Such box or boxes shall be surrounded by two (2) thicknesses of approved fire-resisting materials with an air space between them.

(b) All electrical equipment shall be installed and maintained subject to the approval of the Department of Labor and Industry.

(c) All electrical wiring shall be carried in conduits which are properly grounded.

Section 31. (a) In every Motion Picture Theatre hereafter erected, converted or altered, over every exit from the auditorium there shall be placed an illuminated sign with the word "Exit" thereon in letters of approved color at least eight (8) inches high.

(b) All means of egress shall have signs indicating the way out to the public thoroughfares.

Section 32. (a) Every portion of every Motion Picture Theatre hereafter erected, converted or altered, including exits, aisles, courts, corridors, hallways and passageways devoted to the use or accommodation of the public, shall be so lighted by electric light during all exhibitions, and until the entire audience has left the premises, that a person with normal eyesight shall be able to read Snellen Standard Test Type forty (40) at a distance of twenty (20) feet and Type thirty (30) at a distance of ten (10) feet; normal eyesight meaning ability to read Type twenty (20) at a distance of twenty (20) feet in daylight. Cards showing Types twenty (20), thirty (30), and forty (40) shall be displayed in the principal corridor or hallway, together with a copy of this section.

(b) All means of egress outside the auditorium shall be adequately lighted at all times while the building is occupied by the public.

Section 33. (a) In all Motion Picture Theatres hereafter erected, converted or altered, no light other than approved electric shall be used in any part of the building.

(b) All exit lights and exit signs and all lights in outside courts and in lobbies, stairways, corridors, hallways and passageways, and other portions of such Motion Picture Theatre to which the public may have access, shall be attached to the main circuit, and, in addition, there shall be a separate circuit connected to an approved storage battery or dry battery system, provided with a suitable automatic cut-in switch. Such batteries shall be capable of sustaining all exit lights for at least one (1) hour after the main circuit is discontinued.

(c) All emergency lights shall be controlled only by a special service switch connected directly with the source of supply, and shall be under lock and key and accessible only to authorized persons.

(d) All lights in corridors, hallways, passageways, stairways and wherever else recommended by the Department of Labor and Industry, shall be guarded with approved wire network.

(e) Lights used for lighting the auditorium other than required lights shall be controlled from at least two (2) places, one of which shall be the office or ticket booth, and one of which shall be the motion picture machine booth.

Section 34. (a) In all Motion Picture Theatres hereafter erected, converted or altered, there shall be a permanent motion picture machine booth constructed in accordance with existing State Laws. Such booth, when suspended from a wall or ceiling, shall have a platform and be accessible by a permanent stairway or ladder.

(b) Portable motion picture machine booths should not be used in Motion Picture Theatres.

(c) No combustible materials, other than films in metal containers shall be kept in the motion picture machine booth.

Section 35. (a) In all Motion Picture Theatres hereafter erected, converted or altered, there shall be at least two (2) approved two and one-half ($2\frac{1}{2}$) gallon chemical hand fire extinguishers located in the auditorium, and, in addition, one (1) fire extinguisher of approved type attached to the motion picture machine booth.

(b) All fire apparatus shall be under the control of the local or State Fire Marshal.

Section 36. In all Motion Picture Theatres hereafter erected, converted or altered, the location and position of all hand fire apparatus suggested herein shall be determined by the local or State Fire Marshal, and shall not be removed from that position except when actually in use or for purposes of instruction and inspection. After having been used, such apparatus shall be replaced in good working order. All hand fire extinguishers shall be fastened in position by a fine cord that may be easily broken, and such cord shall be sealed with a tag showing the date of refilling. All chemical hand fire extinguishers shall be examined at least once in every six (6) months, and they shall be refilled when necessary, but in any case they shall be refilled at least once in every twelve (12) months.

Section 37. All employees engaged in or about Motion Picture Theatres hereafter erected, converted or altered, shall be required to know how to operate all fire apparatus in the building, and it shall be the duty of the person engaging such employees or operating such building to see that all employees are properly and thoroughly instructed.

Section 38. (a) In all Motion Picture Theatres hereafter erected, converted or altered, only steam or hot water heating systems should be used.

(b) The heater room, fuel room and firing room in such Motion Picture Theatres shall be contained in a room or rooms, the floor, walls, and ceiling, of which are constructed of approved fire-resisting materials. Openings will be permitted; but there should be no opening directly into the auditorium; and such openings should be covered with approved self-closing fire doors.

(c) No such room shall be located under any main aisle, cross aisle, seating space or under the standing space permitted by these recommendations, or under any exit or approaches thereto.

(d) No cast iron boiler operated at more than ten (10) pounds pressure, or steam boiler operated at more than thirty-five (35) pounds pressure shall be located within the main walls of the building.

(e) All piping leading from the heater room to the risers shall be covered with an approved pipe covering at least one (1) inch in thickness, and pipe openings shall be completely filled in around the piping with approved fire-resisting materials.

(f) No coil or radiator shall be placed in any aisle, exit or passageway, unless such coil or radiator is placed in recesses above the floor level.

(g) All supply, return or exhaust pipes shall be encased with approved fire-resisting materials at least one (1) inch in thickness where passing through floors.

ARTICLE III.

Suggested Rules and Regulations for Motion Picture Theatres Priorly Erected, Converted or Altered.

Note. The suggested regulations and standards given below with regard to motion picture theatres heretofore erected, converted, or altered should, where possible, be followed accurately by all owners or directors of buildings in which such motion picture theatres are installed. In some cases, however, by reason of the nature of the construction of the buildings heretofore erected, full compliance with the regulations may not be a physical possibility, and therefore such owners or directors should take the action stated in the following section. Where, as stated above, it is unreasonable to comply with the following rules, motion picture owners or directors should at once so notify the Department of Labor and Industry. Upon receipt of such notice, the Department will dispatch a representative to the location of such theatre, who will suggest such modification from the said rules as will in his judgment maintain reasonable safety for the employees and the patrons of such theatres. When the representative of the Department and the said owners or directors are unable to agree, appeal should be made at once by the said owners or directors to the State Industrial Board for an investigation, hearing, and decision upon the contested points.

Section 39. (a) All Motion Picture Theatres priorly erected, converted or altered, shall be so designed and constructed that the floors shall safely sustain, in addition to the weight of the floor construction, partitions, permanent fixtures and mechanisms that may be set upon them, a live load of not less than one hundred (100) pounds on every square foot of surface; and the stairs and stairways, a live load of not less than one hundred and fifty (150) pounds on every square foot of treads and landings.

Section 40. (a) All means of egrees from any Motion Picture Theatre priorly erected, converted or altered, shall be by doors which shall easily open outward by hand pressure.

(b) Two (2) front doors only, which are not used as emergency exits may be locked except during the time the building is occupied by the public. All other doors shall not be provided with any form of lock or locking mechanism other than a removable bar at least six (6) inches wide and one and one-quarter ($1\frac{1}{4}$) inches thick. This bar shall be located five (5) feet from the floor, and shall be supported on the door and door frame by "L"-shaped castings or forgings in such a manner that, to unlock the door, the bar must be lifted upwards to disengage it from the supports. No other form of supports should be used.

(c) About the middle of each bar, there shall be painted on each side the words "Closed", "Unlawful." These words "Closed", "Unlawful" shall be visible when the door is barred no matter which side of the bar is placed outward. The words "Open", "Push" shall be painted on each exit door in such a manner as to be covered by the bar when the door is barred, and to be exposed to the view of the audience when the door is unbarred. The lettering shall be at least five (5) inches in height.

(d) Such doors may be provided with springs or light devices, not locks, to hold the doors in a closed position, and shall at all times permit the door to yield to slight hand pressure. Such devices be of approved design. Substitutes, equivalents or modifications of this method of locking the doors should not be used.

(e) All exit doors shall be unlocked and unbarred during the entire time that the Motion Picture Theatre is occupied by the public.

Section 41. (a) In every Motion Picture Theatre priorly erected, converted or altered, no wall projection, radiator or other obstruction of any kind shall be placed in any aisle, corridor, hallway, passageway or exit. No person, except the necessary attendants, shall be allowed to stand in or occupy any aisle, corridor, hallway, passageway or exit while such building is open to the public; but a space may be reserved back of the last row of seats in which not more than twenty (20) per cent of the total seating capacity will be permitted to stand; provided that, there shall be at least three (3) square feet of floor area for each person standing. Such space shall be separated from main aisles by approved railings and shall be directly accessible to at least one (1) exit on at least two (2) different sides.

(b) There shall be placards posted in at least two (2) conspicuous places in such Motion Picture Theatre, stating the exact number of seats permitted, and the exact number of persons permitted to stand. Such placard shall be signed by the Department of Labor and Industry.

Section 42. (a) All Motion Picture Theatres priorly erected, converted or altered, shall be ventilated by an approved natural or mechanical system which will supply not less than one thousand five hundred (1,500) cubic feet of fresh air per hour to each person designed to be accommodated.

(b) The number, size and location of the air inlets and discharging ducts shall be such as to distribute the incoming air and remove the vitiated air evenly without exposing any person to direct draft.

(c) The fresh air supply shall be taken from outside the building, and no vitiated air, or air from basements, cellars, or other rooms shall be used for ventilating purposes, and such air shall be filtered when so ordered by the local Board of Health or State Department of Health.

(d) All such buildings shall be thoroughly ventilated immediately before and immediately after each occupation, and the ventilating system shall be kept in constant operation during the occupation.

(e) All blowers or fans used to distribute air through ventilating pipes, ducts or flues shall be electrically operated, and the motor shall be provided with an automatic cut-out switch which shall be controlled by fusible links in the circuit operating the cut-out switch. One of these fusible links shall be placed in the motion picture machine booth. Additional fusible links shall be placed at other hazardous points if in th opinion of the local or State Fire Marshal they are necessary.

(f) Dampers shall be provided at the intake of all ventilating pipes, ducts or flues, and shall be held open by a combustible cord.

(g) Exhausted or vitiated air shall be carried to a point at least two (2) feet above the roof.

Section 43. (a) All Motion Picture Theatres priorly erected, converted or altered, of frame construction, accommodating or designed or intended to accommodate not more than two hundred and fifty (250) persons shall abut on a street in the front and a street or public alley in the rear or at the side, or an open, unobstructed space at least seven (7) feet wide in the rear or at the side, as the case may be, leading to a public thoroughfare.

(b) Such Motion Picture Theatres having a greatest inside width of more than twenty (20) feet shall have at least two (2) exit openings at the street front each having a width of at least five (5) feet in the clear, and at least one (1) exit opening in the rear or at the side, as the case may be, having a width of at least five (5) feet in the clear; except that in lieu of such one (1) exit opening in the side or the rear, two (2) exits will be permitted in the side or the rear, two (2) exits may be permitted in the side or the rear,

as the case may be, each having a width of not less than three (3) feet in the clear. In case of reversed houses the location of exits may be reversed.

(c) Such Motion Picture Theatres having a greatest inside width of twenty (20) feet or less shall have at least two (2) exit openings at the street front each having a width of at least three (3) feet in the clear, and at least one (1) exit opening at the rear or at the side, as the case may be, having a width of at least five (5) feet in the clear; except that in lieu of such one (1) exit opening at the side or at the rear there shall be at least two (2) exit openings at the side or at the rear, as the case may be, each having a width of at least three (3) feet in the clear.

(d) In all such Motion Picture Theatres there shall be at least one (1) main aisle leading directly to an exit opening at the street front. Such main aisle shall have a width of at least four (4) feet in the clear; except that, where there is more than one (1) main aisle, all main aisles shall each have a width of approximately three (3) feet in the clear.

(e) In such Motion Picture Theatres there shall be not more than six (6) seats intervening between any one (1) seat and an aisle nor more than thirteen (13) seats in any row between any two (2) aisles. Rows of seats shall not be less than twenty-eight (28) inches apart measured from back to back. All seats shall be separated by arms and shall be at least eighteen (18) inches in width from center to center. Seats shall be securely fastened to the floor and no swivel or revolving seats should be used.

(f) In such Motion Picture Theatres all interior walls, partitions and ceilings shall be covered with an approved fire and water resisting plaster of approved thickness, or they shall be covered with an approved metal sheeting in such a manner that there are no voids or spaces back of the sheeting.

(g) No such Motion Picture Theatre should have a balcony or gallery.

(h) In such Motion Picture Theatres there may be not more than one (1) stairway leading to the basement or cellar, as the case may be. Such stairway shall be enclosed and shall be approached by only one opening which shall be covered with an approved self-closing door opening outwards from the basement or cellar, as the case may be. No trap doors should be used. Such stairway and door shall be so located as not to interefere with the free passage to any exit and shall not be in view of the audience when leaving.

(i) Nothing herein shall be construed to permit any such Motion Picture Theatre within the established fire limits or fire zone of any city or borough where they are prohibited by local ordinance.

Section 44. (a) All Motion Picture Theatres priorly erected, converted or altered, of frame construction, accommodating or designed or intended to accommodate more than two hundred and fifty (250) persons and not more than five hundred (500) persons shall abut on a street in the front and a street or public alley in the rear or at one (1) side, or upon an open space at least seven (7) feet wide leading either at the side or at the rear to a street or public alley.

(b) Such Motion Picture Theatres wherever it is practicable shall in addition have a court at least five (5) feet in width on at least one (1) side. Such court shall extend the whole length or width of the building, as the case may be; shall be open and unobstructed to the sky; and shall lead directly to a public thoroughfare. There shall be at least one (1) exit opening at least five (5) feet in width in the clear, opening upon every such court.

(c) Such Motion Picture Theatres shall have at least three (3) exit openings at the street front each having a width of at least five (5) feet in the clear, and at least two (2) exit openings at the rear each having a width of six (6) feet in the clear. In all cases, however, the aggregate width of exit openings shall be not less than thirty-eight (38) feet.

(d) The front of such Motion Picture Theatres shall be as wide as the widest part of the auditorium.

(e) In such Motion Picture Theatres there shall be at least two (2) main aisles leading directly to exit openings at the street front, except that where there is a side court with an exit opening thereto there need be but one (1) main aisle leading directly to an exit opening at the street front. Main aisles having seats on both sides shall have a uniform width of not less than four (4) feet in the clear, and where there are seats on only one side they shall have a uniform width of not less than three (3) feet, six (6) inches in the clear.

(f) Such Motion Picture Theatre shall have not more than six (6) seats intervening between any one seat and an aisle nor more than thirteen (13) seats in one (1) row between any two (2) aisles. Rows of seats shall be not less than twenty-eight (28) inches apart measured from back to back. All seats shall be separated by arms and shall be at least eighteen (18) inches in width from center to center. Seats shall be securely fastened to the floor and no swivel or revolving seats should be used.

(g) In all such Motion Picture Theatres all interior walls, partitions and ceilings shall be covered with an approved fire and water resisting plaster of approved thickness, or with an approved metal sheeting.

(h) No such Motion Picture Theatre should have a balcony or gallery.

(i) In such Motion Picture Theatres there may be not more than one (1) stairway leading to the basement or cellar, as the case may be. Such stairway shall be enclosed and shall be approached by only one (1) opening which shall be covered with an approved self-closing door opening outwards from the basement or cellar, as the case may be. No trap doors should be used. Such stairway and door shall be so located as not to interfere with the free passage to any exit, and shall not be in view of the audience when leaving.

(j) Nothing herein shall be construed to permit any such Motion Picture Theatre within the established fire limits or fire zone of any city or borough where they are prohibited by local ordinance.

Section 45. (a) No Motion Picture Theatre priorly erected, converted or altered, will be permitted in any building of frame construction more than two (2) stories in height. No business in which inflammable or easily combustible materials are stored, dealt in or handled should be conducted in any such building.

(b) Wherever such building of which a Motion Picture Theatre is a part is used for other purposes there shall be separate exits to the street from all parts of the building.

Section 46. Motion Picture Theatres priorly erected, converted or altered, of frame construction, accommodating or designed or intended to accommodate more than five hundred (500) persons should not be used.

Section 47. (a) Motion Picture Theatres priorly erected, converted or altered, of mill construction, slow burning construction, or ordinary construction, accommodating or designed or intended to accommodate not more than two hundred and fifty (250) persons shall abut on a street in the front and a street or public alley in the rear or at the side, or an open, unobstructed space at least seven (7) feet wide in the rear or at the side, as the case may be, leading to a public thoroughfare.

(b) Such Motion Picture Theatres having a greatest inside width of more than twenty (20) feet shall have at least two (2) exit openings at the street front each having a width of at least five (5) feet in the clear, and at least one (1) exit opening in the rear or at the side, as the case may be, having a width of at least five (5) feet in the clear; except that in lieu of such one (1) exit opening in the side or the rear, two (2) exits will be permitted in the side or the rear, as the case may be, each having a width of not less than three (3) feet in the clear. In case of reversed houses the location of exits may be reversed.

(c) Such Motion Picture Theatres having a greatest inside width of twenty (20) feet or less shall have at least two (2) exit openings at the street front each having a width of at least three (3) feet in the clear, and at least one (1) exit opening at the rear or at the side, as the case may be, having a width of at least five (5) feet in the clear; except that in lieu of such one (1) exit opening at the side or at the rear there shall be at least two (2) exit openings at the side or at the rear, as the case may be, each having a width of at least three (3) feet in the clear.

(d) In such Motion Picture Theatres there shall be at least one (1) main aisle leading directly to an exit opening at the street front. Such main aisle shall have a width of at least four (4) feet in the clear; except that, where there is more than one (1) main aisle all main aisles shall each have a width of at least approximately three (3) feet in the clear.

(e) In such Motion Picture Theatres there shall be not more than six (6) seats intervening between any one (1) seat and an aisle nor more than thirteen (13) seats in any row between any two (2) aisles. Rows of seats shall not be less than twenty-eight (28) inches apart measured from back to back. All seats shall be separated by arms and shall be at least eighteen (18) inches in width from center to center. Seats shall be securely fastened to the floor and no swivel or revolving seats should be used.

(f) In such Motion Picture Theatre all interior walls, partitions, and ceilings shall be covered with an approved fire and water resisting plaster of approved thickness, or they shall be coverel with an approved metal sheeting in such a manner that there are no voids or spaces back of the sheeting.

(g) No such Motion Picture Theatre should have a balcony or gallery.

(h) In such Motion Picture Theatres there may be not more than one (1) stairway leading to the basement or cellar, as the case may be. Such stairway shall be enclosed and shall be approached by only one (1) opening which shall be covered with an approved self-closing door opening outwards from the basement or cellar, as the case may be. No trap doors should be used. Such stairway and door shall be so located as not to interfere with the free passage to any exit and shall not be in view of the audience when leaving.

(i) Nothing herein shall be construed to permit any such Motion Picture Theatre within the established fire limits or fire zone of any city or borough where they are prohibited by local ordinance.

Section 48. (a) Motion Picture Theatres priorly erected, converted or altered, of mill construction, slow burning or ordinary construction, accommodating or designed or intended to accommodate more than two hundred and fifty (250) persons and not more than

five hundred (500) persons shall abut on a street in the front and a street or public alley in the rear or at one (1) side, or upon an open space at least seven (7) feet wide which abuts either at the side or at the rear on a street or public alley.

(b) Such Motion Picture Theatres wherever it is practicable shall in addition have a court at least five (5) feet in width on at least one (1) side. Such court shall extend the whole length or width of the building, as the case may be; shall be open and unobstructed to the sky; and shall lead directly to a public thoroughfare. There shall be at least one (1) exit opening at least five (5) feet in width in the clear opening upon every such court.

(c) Such Motion Picture Theatre shall have at least three (3) exit openings at the street front each having a width of at least five (5) feet in the clear, and at least two (2) exit openings at the rear each having a width of six (6) feet in the clear. In all cases, however, the aggregate width of exit openings shall be not less than thirty-eight (38) feet.

(d) The front of such Motion Picture Theatres shall be as wide as the widest part of the auditorium.

(e) In such Motion Picture Theatres there shall be at least two (2) main aisles leading directly to exit openings at the street front, except that where there is a side court with an exit opening thereto there need be but one (1) main aisle leading directly to an exit opening at the street front. Main aisles having seats on both sides shall have a uniform width of not less than four (4) feet in the clear, and where there are seats on only one side they shall have a uniform width of not less than three (3) feet, six (6) inches in the clear.

(f) Such Motion Picture Theatres shall have not more than six (6) seats intervening between any one seat and an aisle nor more than thirteen (13) seats in one (1) row between any two (2) aisles. Rows of seats shall be not less than twenty-eight (28) inches apart measured from back to back. All seats shall be separated by arms and shall be at least eighteen (18) inches in width from center to center. Seats shall be securely fastened to the floor and no swivel or revolving seats should be used.

(g) In all such Motion Picture Theatres all interior walls, partitions and ceilings shall be covered with an approved fire and water resisting plaster of approved thickness, or with an approved metal sheeting in such a manner that there are no voids or spaces back of the sheeting.

(h) No such Motion Picture Theatre should have a balcony or gallery.

(i) In such Motion Picture Theatres there may be not more than one (1) stairway leading to the basement or cellar, as the case may be. Such stairway shall be enclosed and shall be approached by only one (1) opening which shall be covered with an approved self-closing door opening outwards from the basement or cellar as the case may be. No trap doors should be used. Such stairway and door shall be located so as not to interfere with the free passage to any exit and shall not be in view of the audience when leaving.

(j) Nothing herein shall be construed to permit any such Motion Picture Theatre within the established fire limits or fire zone of any city or borough where they are prohibited by local ordinance.

Section 49. (a) Motion Picture Theatres priorly erected, converted or altered, of mill construction, slow burning construction or ordinary construction, accommodating or designed or intended to accommodate more than five hundred (500) persons shall abut on a street in the front and a street or public alley in the rear or at the side, or an open unobstructed space in the rear or at the side, leading to a public thoroughfare in the rear or at the side, as the case may be. Such open unobstructed space shall be at least seven feet in width and shall extend the full length or width of the building, as the case may be.

(b) If there is no street or public alley in the rear of the building, one (1) side court may be used as a substitute therefore, provided that such court is at least seven (7) feet in width; that it leads from the street in the front to a court in the rear at least seven (7) feet in width, such rear court to extend across the width of the building; that it be open and unobstructed to the sky and is enclosed by walls throughout its entire length which are constructed of or faced with approved fire-resistive materials, and provided that there are no openings in any such walls except the exit openings suggested by these recommendations nearer than ten (10) feet from the level of the court.

(c) Such Motion Picture Theatres shall wherever practicable have in addition one (1) or two (2) side courts, as the case may be, at least five (5) feet in width extending from the street in the front to the street, public alley or open space or court in the rear.

(d) Such Motion Picture Theatres shall have at least three (3) exit openings at the street front, each having a width of at least five (5) feet in the clear and at least two (2) exit openings in the rear, each having a width of at least five (5) feet in the clear, and the aggregate width of such exit openings at the front and at the rear shall increase in the ratio of twenty (20) inches for each one hundred (100) persons or fractional part thereof more than five hundred (500). The total aggergate width of exit openings in such Motion Picture

Theatres shall be at least forty (40) per cent greater than the aggregate width of suggested exit openings at the front and rear. Whereever there are side courts there shall be at least two (2) exit openings thereto each having a width of at least five (5) feet in the clear.

(e) Such Motion Picture Theatres shall have at least two (2) main aisles at least one (1) of which shall lead directly to an exit opening at the street front. Main aisles having seats on both sides shall have a uniform width of not less than four (4) feet in the clear, and where there are seats on only one (1) side they shall have a uniform width of not less than three (3) feet, six (6) inches in the clear. Wherever side courts may be suggested by these recommendations there shall be at least one (1) cross aisle at least four (4) feet in width leading to a side exit or at least two (2) cross aisles at least three (3) feet wide each. Where there are more than two (2) main aisles such cross aisle or cross aisles shall extend across the width of the auditorium.

(f) Such Motion Picture Theatres shall have not more than six (6) seats intervening between any one (1) seat and an aisle nor more than thirteen (13) seats in any row between any two (2) aisles. Rows of seats shall be not less than twenty-eight (28) inches apart measured from back to back. All seats shall be separated by arms and shall be at least eighteen (18) inches in width from center to center. Seats shall be securely fastened to the floor and no swivel or revolving seats should be used.

(g) No such Motion Picture Theatre should have a balcony or gallery.

(h) In such Motion Picture Theatres there may be not more than one (1) stairway leading to the basement or cellar, as the case may be. Such stairway shall be enclosed and shall be approached by only one opening which shall be covered with an approved self-closing door opening towards the auditorium. No trap doors should be used. Such stairway and door shall be so located as not to interfere with the free passage to any exit.

(i) In such Motion Picture Theatres all interior walls, partitions and ceilings shall be covered with an approved fire and water resisting plaster of approved thickness, or they shall be covered with an approved metal sheeting in such a manner that there are not voids or spaces back of the sheeting.

Section 50. (a) Motion Picture Theatres priorly erected, converted or altered, of mill construction, slow burning construction, or ordinary construction may be located in buildings that are used for other purposes; but no hotel or tenement house, or business storing, dealing in or handling any easily inflammable or combustible materials, should be located in any building together with such Motion Picture Theatre.

(b) Wherever any building of which a Motion Picture Theatre is a part is used for other purposes there shall be separate exits to the street from all parts of the building and such Motion Picture Theatre shall be separated from the rest of the building by unpierced fire walls.

Section 51. (a) Motion Picture Theatres priorly erected, converted or altered, of fire-resistive construction shall comply with all the provisions of these recommendations relating to buildings of mill construction, slow burning construction or ordinary construction priorly erected, converted or altered, of similar capacities.

(b) Where balconies are constructed in Motion Picture Theatres priorly erected, converted or altered of fire-resistive construction, they should conform to the following recommendations.

1. There shall be at least two (2) stairways located on opposite sides of the balcony leading directly to the street or principal entrance corridor. In either case separate exit openings shall be provided in addition to other required exit openings. Where such stairways lead to the principal entrance corridor these additional exit openings shall be located directly opposite them and there shall be no obstruction of any kind in the line of travel. Such stairways shall be constructed of approved fire-resistive materials and shall be provided with hand-rails on each side. Such hand railings shall be approximately three (3) feet high, shall be firmly attached to the walls and may be of wood. All such stairways shall be so arranged that the bottom flight will lead in the direction of the street or exit opening. All such stairways shall be approximately four (4) feet in width and shall not ascend to a greater height than approximately thirteen (13) feet, four (4) inches without a level landing. The length and width of such landing shall be not less than the width of the stairway and no run of stairs shall consist of less than six (6) risers between landings. Stairways seven (7) feet or more in width shall have intermediate hand rails with end newel posts at least seven (7) feet high. Risers shall be not more than eight (8) inches in height and treads shall be not less than nine (9) inches in width.

2. Such Motion Picture Theatres shall have a court at least five (5) feet in width on each side; except that where any such Motion Picture Theatre abuts on a street in the front and a street, public alley or open space at least seven (7) feet wide on one (1) side it need have but one (1) court located on the opposite side.

3. There shall be at least one (1) exit opening on each side of the balcony and at such exit opening there shall be constructed a platform and stairway fire escape supported directly from the ground and held to the building by suitable anchor bolts, leading to the court or to the street, public alley or open space, as the case may be. There need be but one (1) such stairway fire escape on each side. Such balcony

and fire escapes shall be constructed of approved fire-resistive materials, and they shall be not less than two (2) feet, six (6) inches in width and at no time greater than one-half (½) the width of the court. They shall be equipped with hand rails approximately three (3) feet, nine (9) inches in height which shall be supported on standards of a design to withstand a pressure of one thousand (1,000) pounds applied to the hand rail at its weakest point. The open space between the standards shall be protected with metal lattice work or expanded metal or other metal of approved design. Treads and landings shall be constructed of gridwork having openings of not greater than three-fourths (¾) inch; or shall be constructed of approved non-slipping material. The bottom flight shall be against the building, shall lead in the direction of the public thoroughfare, and shall at all times rest on the ground. All such platforms and stairway fire escapes shall be covered with a metal hood or awning throughout their entire length.

Section 52. All courts and open spaces leading to public thoroughfares of Motion Picture Theatres priorly erected, converted or altered, shall be graded and sufficiently drained; and, wherever recommended by the Department of Labor and Industry, shall be paved with an approved paving.

Section 53. (a) In Motion Picture Theatres priorly erected, converted or altered, whenever the seats are rearranged there shall be not more than six (6) seats intervening between any one seat and an aisle, nor more than thirteen (13) seats in any row between any two (2) aisles. Rows of seats shall be not less than thirty (30) inches apart measured from back to back. All seats shall be separated by arms, and shall be not less than eighteen (18) inches in width from center to center. All seats shall be securely fastened to the floor and no swivel or revolving seats should be used.

(b) Where new seats are installed in any such Motion Picture Theatre they shall be not less than eighteen (18) inches in width between arms.

Section 54. In Motion Picture Theatres priorly erected, converted or altered, risers should not be used in aisles, corridors, hallways or passageways. All differences of level shall be overcome by approved inclines.

Section 55. (a) In Motion Picture Theatres priorly erected, converted or altered, wherever any stairway, corridor, hallway or passageway leads into any office room, check room, retiring room or other room there shall be at least two (2) means of exit from such room located on different sides, one of which shall lead directly to an outer exit of the building.

(b) No such room to which the public has access should be located in any basement or cellar.

Section 56. (a) In Motion Picture Theatres priorly erected, converted or altered, all stairways within the buildings shall have risers not more than eight (8) inches in height and treads not less than nine (9) inches in width, and all stairways for the use of the public shall be at least four (4) feet in width in the clear.

(b) In such Motion Picture Theatres, stairways which are not constructed of approved fire-resistive materials shall have the underside protected with an approved fire and water resisting plaster of approved thickness laid on metal lath.

(c) In such Motion Picture Theatres where the walls are not constructed of approved fire-resistive materials they shall be protected by an approved fire and water resisting plaster of approved thickness laid on metal lath. Where such walls are interior walls both sides shall be so protected.

(d) In such Motion Picture Theatres there should be no circular stairways or winders.

Section 57. In Motion Picture Theatres priorly erected, converted or altered, the level of the front entrance at the sidewalk shall be not higher than eight (8) inches above the level of the sidewalk.

Section 58. (a) In Motion Picture Theatres priorly erected, converted or altered, all exit openings shall have a height of approximately seven (7) feet in the clear; except that, when under the picture screen they need be but approximately six (6) feet, six (6) inches in height in the clear.

(b) In such Motion Picture Theatres all exits may be used for entrances, but the provisions of this section should be complied with.

(c) In such Motion Picture Theatres there shall be exit openings in the foyer wall, and in any partition between the foyer wall and the front of the building, to correspond in number and size with the exit openings herein recommended at the street front and directly opposite such exit openings. There shall be no construction of any kind whatever in the line of passage between such exit openings.

(d) In such Motion Picture Theatres the sills of such exit openings shall be flush with the approach on either side.

Section 59. In Motion Picture Theatres priorly erected, converted or altered, the unoccupied space within the auditorium, exclusive of aisles and the space reserved for standing room, shall be sufficient to contain the whole number of persons accommodated, or designed or intended to be accommodated therein, in the ratio of one and one-half ($1\frac{1}{2}$) square feet of floor area for each person; provided that, the space between the back row of seats and the foyer wall, and between the space reserved for standing room and the foyer wall, shall be free and unobstructed, and shall be at least five (5) feet in width, and shall extend across the full width of the auditorium.

Section 60. (a) In Motion Picture Theatres priorly erected, converted or altered, no mirrors should be used with the exception of one (1) mirror not more than two (2) feet by four (4) feet in size on either side of the auditorium, but the lower side of such mirror shall be not nearer than four (4) feet to the floor.

(b) In such Motion Picture Theatres no architectural feature shall be so arranged as to give the appearance of a doorway, window, corridor, hallway or passageway where none exists.

Section 61. In Motion Picture Theatres priorly erected, converted or altered, the floor level of the highest row of seats shall be not more than five (5) feet above the sidewalk level, and the floor level of the lowest row of seats shall be not more than six (6) feet below the sidewalk level. Both such levels shall be measured from the same sidewalk level.

Section 62. (a) In Motion Picture Theatres priorly erected, converted or altered, of fire-resistive construction where a stage already exists it will be permitted to remain; but the stage should be built of approved fire-resistive materials; and there should be no movable scenery; and the permanent scenery should be constructed of approved fire-resistive materials.

(b) In such Motion Picture Theatres of fire-resistive construction where a stage is not already constructed and in such Motion Picture Theatres of other than fire-resistive construction a stage should not be used but a platform may be used in lieu of a stage; but it should be not more than eight (8) feet in depth; and no movable scenery should be employed; and a free unoccupied space of at least four (4) feet should be preserved between the front of the platform and the first row of seats. Such platform shall be constructed entirely of approved fire-resisting materials; except that the floor covering or flooring may be of wood not less than seven-eighths ($\frac{7}{8}$) inch thick.

Section 63. In Motion Picture Theatres priorly erected, converted or altered, the picture screen shall be made of approved fire-resistive materials, or of materials treated with an approved fire-proofing solution that does not destroy the effectiveness of the picture screen, and approved by the local or State fire marshal. Such picture screen shall be placed against the rear wall where practicable. Mirror screens will be permitted.

Section 64. (a) In Motion Picture Theatres priorly erected, converted or altered, all fuses and switches shall be enclosed in a box or boxes. Such box or boxes shall be surrounded by two (2) thicknesses of approved fire-resistive materials with an air space between them.

(b) In such Motion Picture Theatres all electrical equipment shall be installed and maintained subject to the approval of the Department of Labor and Industry.

(c) In such Motion Picture Theatres all electrical wiring shall be carried in conduits which are properly grounded.

Section 65. (a) In Motion Picture Theatres priorly erected, converted or altered, over every exit from the auditorium there shall be placed an illuminated sign with the word "Exit" thereon in letters of approved color at least eight (8) inches high.

(b) In such Motion Picture Theatres all means of egress shall have signs indicating the way out to the public thoroughfare.

Section 66. (a) Every portion of Motion Picture Theatres priorly erected, converted or altered, including exits, aisles, courts, corridors, hallways and passageways devoted to the use or accommodation of the public, shall be so lighted by electric light during all exhibitions, and until the entire audience has left the premises, that a person with normal eye-sight shall be able to read Snellen Standard Test Type forty (40) at a distance of twenty (20) feet and type thirty (30) at a distance of ten (10) feet; normal eyesight meaning ability to read type twenty (20) at a distance of twenty (20) feet in daylight. Cards showing types twenty (20), thirty (30) and forty (40) shall be displayed in the principal corridor or hallway, together with a copy of this section.

(b) All means of egress outside the auditorium shall be adequately lighted at all times while the building is occupied by the public.

Section 67. (a) In Motion Picture Theatres priorly erected, converted or altered, no light other than approved electric shall be used in any part of the building.

(b) In such Motion Picture Theatres all exit lights and exit signs and all lights in outside courts and in lobbies, stairways, corridors, hallways and passageways to which the public may have access, shall be attached to the main circuit, and, in addition, there shall be a separate circuit connected to an approved storage battery or dry battery system, provided with a suitable automatic cut-in switch and charging device. Such batteries shall be capable of sustaining all exit lights for at least one (1) hour after the main circuit is discontinued.

(c) In such Motion Picture Theatres all exit and required lights shall be controlled only by a special service switch connected directly with the source of supply, and shall be under lock and key and accessible only to authorized persons.

(d) In such Motion Picture Theatres all lights in corridors, hallways, passageways, stairways, and wherever else recommended by the Department of Labor and Industry, shall be guarded with approved wire network.

(e) In such Motion Picture Theatres lights other than required lights used for lighting the auditorium shall be controlled from at least two (2) places, one of which shall be the office, and one of which shall be the motion picture machine booth.

Section 68. (a) In Motion Picture Theatres priorly erected, converted or altered, there shall be a permanent motion picture machine booth constructed in accordance with existing State laws. Such booth, when suspended from a wall or ceiling, shall have a platform and be accessible by a permanent stairway or ladder.

(b) In such Motion Picture Theatres portable motion picture machine booths should not be used.

(c) In such Motion Picture Theatres no combustible materials, other than films in solderless metal containers, shall be kept in the motion picture machine booth.

Section 69. (a) In Motion Picture Theatres priorly erected, converted or altered, there shall be at least two (2) approved two and one-half ($2\frac{1}{2}$) gallon chemical hand fire extinguishers located in the auditorium, and, in addition, one (1) fire extinguisher of approved type attached to the motion picture machine booth.

(b) In such Motion Picture Theatres all fire apparatus shall be under the control of the local or State Fire Marshal.

Section 70. (a) In Motion Picture Theatres priorly erected, converted or altered, the location and position of all hand fire apparatus recommended herein shall be determined by the local or State Fire Marshal, and shall not be removed from that position except when actually in use or for purposes of instruction and inspection. After having been used, such apparatus shall be replaced in good working order. All hand fire extinguishers shall be fastened in position by a fine cord that may be easily broken, and such cord shall be sealed with a tag showing the date of sealing. All chemical hand fire extinguishers shall be examined at least once in every six (6) months, and they shall be refilled when necessary, but in any case they shall be refilled at least once in every twelve (12) months.

(b) In such Motion Picture Theatres, attached to the nozzle of all chemical hand fire extinguishers there shall be a long needle of steel wire suitable for cleaning out the opening of the nozzle in case it should become clogged up.

Section 71. All employees engaged in or about Motion Picture Theatres priorly erected, converted or altered, shall be required to know how to operate all fire apparatus in the building, and it shall be the duty of the person engaging such employees or operating such building to see that all employees are properly and thoroughly instructed.

Section 72. (a) In Motion Picture Theatres priorly erected, converted or altered, only steam, hot water or other approved heating systems should be used. Hot air furnaces should not be used.

(b) In such Motion Picture Theatres the heater room, fuel room and firing room shall be enclosed with floors, walls and ceilings constructed of approved fire-resistive materials. Openings will be per-

mitted but there should be no opening directly into the auditorium; and such openings should be covered with approved self-closing fire doors.

(c) In such Motion Picture Theatres, no such room shall be located under any main aisle, cross aisle, seating space, or under the standing space permitted by these recommendations, or under any exit or approaches thereto.

(d) In such Motion Picture Theatres no cast iron boiler operated at more than ten (10) pounds pressure, or steam boiler operated at more than thirty-five (35) pounds pressure shall be located within the main walls of the buildings.

(e) In such Motion Picture Theatres all piping leading from the heater room to the risers shall be covered with an approved pipe covering at least one (1) inch in thickness, and pipe openings shall be completely filled in around the piping with approved fire-resistive materials.

(f) In such Motion Picture Theatres no coil or radiator shall be placed in any aisle, exit or passageway, unless such coil or radiator is placed in a recess above the floor level.

(g) In such Motion Picture Theatres all supply, return or exhaust pipes shall be encased with approved fire-resistive materials at least one (1) inch in thickness where they pass through floors.

ARTICLE IV.

(Note—This article, containing definitions, is taken from the proposals of the State Building Code Commission and is purely explanatory.)

Section 73. (a) Certain words, terms and expressions used in these recommendations are for the purposes thereof hereby expressly defined, and wherever they appear they shall convey the following meanings:

(b) Words used in the singular shall include the plural, and words used in the plural shall include the singular.

Section 74. *Aisle* shall mean the space between ends of rows of seats, or between a wall and ends of rows of seats. (See main aisle; cross aisle.)

Section 75. *Altered,* when used in these recommendations with reference to Motion Picture Theatres hereafter erected or converted, shall have reference only to changes and alterations in Motion Picture Theatres which are hereafter erected or converted.

Section 76. *Approved* shall mean the approval of the Department of Labor and Industry.

Section 77. *Auditorium* shall mean that portion of a Motion Picture Theatre in which seating room and standing room are provided for the public while witnessing the pictures.

Section 78. *Basement* is the space beneath the first floor above grade which is partly but not more than one-half (½) below the highest point of grade, or the highest surface of the ground immediately adjoining the building if there is no grade, or if surface is higher than grade.

Section 79. *Building* shall mean and include every structure having walls and covered with a roof.

Section 80. *Ceiling* shall mean the under side of a floor or roof, or the upper covering of any booth or other enclosed or partly enclosed space within a building.

Section 81. *Cellar* is the space beneath the first floor above grade which is more than one-half (½) below the highest point of grade, or the highest surface of the ground immediately adjoining the building if there is no grade, or if such surface is higher than grade.

Section 82. *Common wall* is a wall used or built to be used for the common separation or support of adjoining buildings.

Section 83. *Court* shall mean an open, unoccupied, unobstructed space, other than a yard, on the same lot as the building. A Court entirely surrounded by a building is an *inner court*. *Lot Line court* is a court one side of which is bounded by a lot line, and the other sides by a building. A court extending to a street, alley or yard, is an *outer court*.

Section 84. *Cross aisle* shall mean any aisle which meets or intersects a main aisle.

Section 85. *Fireproof construction* shall mean that type of construction in which all parts of a building that carry loads or resist stresses, all exterior and interior walls, all interior partitions, and all stairways and the enclosing walls of stairways and elevator shafts, all doors, window frames and sash, and all trimming of stairways and elevator shafts are of approved fire-resisting materials, and where the exposed metal members of construction are covered with approved fire-resisting materials. The floor covering or flooring may be of wood; provided that, it is laid on a continuous base of brick or concrete or other approved fire-resisting materials.

Section 86. *Fire-resisting materials* shall mean those approved materials having desirable fire-resisting qualities.

Section 87. *Fire wall* shall mean a wall, continuous vertically or continuous horizontally, built of approved fire-resisting materials, separating two (2) buildings or parts of the same building. Vertical fire walls shall extend from the bottom of the lowest cellar, or the basement, if there is no cellar, to a height of at least three (3) feet above the roof throughout their entire length. Where permitted by these recommendations, fire walls may have openings; provided that, they are equipped with approved self-closing fire doors; except that, automatic self-closing fire doors may be used in conjunction with approved self-closing fire doors where hereinafter permitted.

Section 88. *Floor* shall mean that part of the construction of a building separating a cellar, basement, story or attic from the ground, cellar, basement or story next below.

Section 89. *Floor covering or flooring* shall mean the upper side of a floor.

Section 90. *Frame construction* shall mean that form of construction in which the exterior walls or portion thereof are of wood.

Section 91. *Foyer wall* shall mean the wall between the auditorium and the lobby.

Section 92. *Grade* shall mean the level of the surface of the ground established by law and on record.

Section 93. *Height of story* shall mean the vertical distance from the top of the finished floor to the under side of the finished ceiling of the same story.

Section 94. *Hereafter* shall mean after the date of the approval of this code.

Section 95. *Interior lot* shall mean a lot other than a corner lot.

Section 96. *Live loads* shall mean all imposed, fixed or transient loads (other than dead loads) due to the occupancy of the building and its exposure to wind pressure, and all construction not entering into the strength or stability of the building or structure.

Section 97. *Mill construction* is that form of construction in which the exterior walls are of approved fire-resisting materials, and the interior structural parts are of wood of minimum sizes and dimensions, subject to the detail requirements hereinafter set forth.

Section 98. *Ordinary construction* shall mean that form of construction other than fireproof construction or mill construction in which the enclosing walls are built of approved fire-resisting materials.

Section 99. *Lot* shall mean the entire area devoted to one building, including all yards and courts.

Section 100. *Main aisle* shall mean any aisle leading in a straight line from the foyer wall to or toward the rear wall, or the wall which the audience faces when seated.

Section 101. *Motion picture theatre* shall mean every building, hall or room designed or used for the exhibition of motion pictures and not having a stage and not using movable scenery.

Section 102. *Priorly* shall mean before the date of the approval of this code.

Section 103. *Roof* is that part of the construction of a building which forms the top or covering of any building.

Section 104. *Structure* shall mean and include everything constructed or erected, the use of which demands a permanent location on the soil, or attached to something having a permanent location on the soil.